MARYLAND PUBLIC

SERVICE COMMISSION

STATUS OF PROGRAMS THAT SUPPORT THE STATE'S GREENHOUSE GAS REDUCTION EFFORTS OR ADDRESS CLIMATE CHANGE

REPORT OF 2024

For Calendar Year 2023

Pursuant to

§ 2-1305(c) of the Environmental Article

Annotated Code of Maryland

Maryland Public Service Commission

6 St. Paul Street

Baltimore, Maryland 21202

www.psc.state.md.us

Introduction

The Maryland Public Service Commission ("Commission") is an independent, quasi-judicial State agency established by the Maryland General Assembly to regulate the activities of public service companies and for-hire transportation companies doing business in Maryland. The Commission is empowered under the Public Utilities Article ("PUA"), *Annotated Code of Maryland*, to hear and decide matters related to, among others, (1) rate adjustments, (2) applications to exercise or abandon franchises, (3) applications to modify the type or scope of service, (4) approval of issuance of securities, (5) promulgation of new rules and regulations, (6) mergers or acquisitions of electric companies or gas companies, and (7) quality of utility and common carrier service. Additionally, the Commission has the authority to issue a Certificate of Public Convenience and Necessity ("CPCN") for the construction or modification of a new generating station, a qualified generator lead line, or an overhead transmission line designed to carry a voltage in excess of 69,000 volts.

While the Commission is not a designated lead agency for the energy sector reduction strategies or programs identified in the State's 2030 Greenhouse Gas Reduction Act ("GGRA") Plan,[1] the Commission submits annual reports to the Maryland General Assembly on the Renewable Energy Portfolio Standard ("RPS")[2] and the EmPOWER Maryland Energy Efficiency Act ("EmPOWER Maryland").[3] Consistent with prior years, the Commission submits the 2024 RPS and EmPOWER Maryland reports, with data for Calendar Year ("CY") 2023, pursuant to Environment Article § 2-1305, *Annotated Code of Maryland*, as Attachments A and B, respectively. These reports provide detailed descriptions of their respective program implementation status. Additionally, the Commission conducted adjudicatory-type proceedings in several energy-related matters in 2023 that go on to support the State's clean energy policies and greenhouse gas emissions reductions efforts. Notable cases and activities are highlighted in the Commission's CY2023 Annual Report, which can be found on the Commission's website.[4] To supplement the attached reports, the Commission highlights the total estimated greenhouse gas ("GHG") emissions from both the EmPOWER and RPS programs for CY2023 below.

[1] The Maryland Energy Administration remains the lead agency under the 2030 GGRA Plan for EmPOWER Maryland and the RPS.
[2] PUA § 7-712.
[3] PUA § 7-211.
[4] https://www.psc.state.md.us/wp-content/uploads/MD-PSC-2023-Annual-Report.pdf.

Estimated Greenhouse Gas Emissions Reductions

For CY2023, the RPS and EmPOWER Maryland achieved an estimated combined GHG emissions reduction of more than 2.8 million metric tons of carbon dioxide (CO_2),[5] based on the following estimates by program:

Table 1: CY2023 Estimated Greenhouse Gas Emissions Reductions

2023 Estimated Greenhouse Gas Emissions Reductions	
Program	**Metric Tons of CO_2 Avoided**
Renewable Portfolio Standard	2,344,065
EmPOWER Maryland	488,890
Total	**2,832,955**

Consideration of Statutory Factors

During the 2021 legislative session, the General Assembly enacted House Bill 298, which took effect on October 1, 2021, and requires the Commission to consider climate impacts, Maryland's climate policies, and fair labor standards in exercising the Commission's regulatory oversight over public service companies. The law also requires the Commission to consider the impact of generating stations and transmission projects on climate change prior to granting a CPCN. After the law took effect, the Commission issued a notice on October 6, 2021, advising regulated companies and other affected entities of the new factors set forth under PUA § 2-113. The Commission now considers these new factors as it evaluates matters that come before the Commission.

In 2022, the General Assembly passed the Climate Solutions Now Act ("CSNA"). This bill set forth targets to reduce statewide GHG emissions by 60 percent from 2006 levels by 2031 and to achieve net-zero GHG emissions by 2045. The CSNA additionally states the General Assembly's intent for the Commission to continue with the submission of plans and determinations required under prior Maryland EmPOWER legislation, including a determination of the advisability of maintaining the methodology and magnitude of the savings trajectory established in PUA § 7-211(g)(2). This takes into account changes to the reductions targets and new program cycle made under PUA § 7-211(g)(2), as enacted by Section 4 of the CSNA. It also changes the core objective of the alteration to percentages for 2025 and later years from electricity reduction to "a portfolio of mutually reinforcing goals, including greenhouse gas emissions reduction, energy savings, net customer benefits, and reaching underserved customers."

[5] Estimated equivalent amounts of avoided CO_2 emissions were converted using the United States Environmental Protection Agency's Greenhouse Gas Equivalencies Calculator, based on energy data contained in the attached 2023 RPS and EmPOWER Maryland reports. https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator.

Attachment A:

2024 Public Service Commission Renewable Energy Portfolio Standard Report

PUBLIC SERVICE COMMISSION OF MARYLAND

RENEWABLE ENERGY PORTFOLIO STANDARD REPORT

With Data for Calendar Year 2023

In compliance with §7-712 of
the Public Utilities Article,
Annotated Code of Maryland

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I. INTRODUCTION

This document constitutes the annual report of the Public Service Commission of Maryland regarding the implementation of the Maryland Renewable Energy Portfolio Standard (RPS) Program, with data for calendar year 2023. This report is submitted pursuant to §7-712 of the Public Utilities Article (PUA), *Annotated Code of Maryland*, which requires the Commission to report to the General Assembly on the status of the implementation of the RPS Program on or before December 1 of each year.[1] The Maryland RPS Program is designed to support a stable and predictable market for energy generated from renewables, to reduce greenhouse gas emissions and eliminate carbon–fueled generation from the State's electric grid, and to lower the cost to consumers of electricity produced from these resources. Implementation of the RPS Program assists in overcoming market barriers seen as impediments to the development of the industry. Moreover, increasing reliance upon renewable energy technologies to satisfy electric power requirements can result in long-term emission reductions, increased fuel diversity, and economic benefits to the State.[2]

The calendar year 2023 electricity supplier compliance reports, as verified by the Commission, indicate that the State of Maryland RPS obligations were partly fulfilled through the submission of Tier 1 and Tier 2 Renewable Energy Credits (RECs).[3] Remaining calendar year 2023 RPS obligations were satisfied by compliance fees, also known as Alternative Compliance Payments (ACPs). This year's ACPs were by far the largest in the history of the RPS, indicating a shift in how electricity suppliers comply with the RPS obligations within Maryland.

A. Objectives of the Program

The objective of PUA §7-701 *et seq.* (the RPS statute) is to recognize and to develop the benefits associated with a diverse portfolio of renewable energy resources to serve Maryland. The State's RPS Program does this by recognizing the environmental and consumer benefits associated with renewable energy. The RPS Program requires electricity suppliers to supply a prescribed minimum portion of their retail electricity sales with various renewable energy resources which have been classified within the RPS statute as Tier 1 and Tier 2 renewable resources. The program is implemented through the creation, sale, and transfer of RECs.

The development of renewable energy resources is further promoted by requiring electricity suppliers to provide an ACP for failing to acquire sufficient RECs to satisfy the RPS as set forth in PUA §7-703. Compliance fees are deposited into the Maryland Strategic Energy Investment Fund (SEIF) as dedicated funds to provide for loans and grants that spur the creation

[1] Electricity suppliers must file an RPS compliance report with the Commission for the prior calendar year by April 1st of the subsequent year. Consequently, this report, which is due to the General Assembly in December 2024, highlights data from electricity suppliers' 2023 compliance reports and other relevant 2023 data. In compliance with PUA §7-712, topics addressed in this report include the availability of Tier 1, Tier 1 Solar, and Tier 2 renewable energy sources, compliance fees collected to support in-State renewable projects, and other pertinent information.

[2] *See* PUA §7-702 which describes the legislative intent and legislative findings in support of the enactment of the Maryland Renewable Energy Portfolio Standard.

[3] *See* Section I.B.2 for a description of eligible Tier 1 and Tier 2 resources and requirements.

of new Tier 1 renewable energy resources in the State including those that are owned by or directly benefit low- to moderate-income communities, or overburdened or underserved communities.[4] Responsibility for developing renewable energy resources is vested with the Maryland Energy Administration (MEA).

B. Overview of the Maryland RPS Program

Under the RPS Program, Maryland electricity suppliers are required to demonstrate compliance on an annual basis with an escalating renewable energy portfolio standard. This requirement applies to both competitive retail suppliers and electric companies in the state, including those that provide Standard Offer Service.[5] Electricity suppliers must file annual compliance reports with the Commission verifying that the renewable requirement for each entity has been satisfied.

A REC constitutes the renewable attributes associated with one megawatt-hour (MWh) of electricity generated using eligible renewable resources. As such, a REC is a uniquely-identified tradable commodity equal to one MWh of electricity generated or obtained from an eligible renewable energy resource. While RECs are often bundled and sold with the generated electricity, RECs can be traded separately. Generators and electricity suppliers may trade RECs using a Commission-approved system known as the Generation Attributes Tracking System (GATS). The GATS system is operated by PJM Environmental Information Services, Inc. (PJM-EIS) and is designed to track the ownership and trading of generation attributes.[6] A REC previously had a three-year lifespan during which it may be transferred, sold, or redeemed, however, in 2024, this was increased to five years due to the passage of Senate Bill 783 in 2024.[7] Each electricity supplier must document annually the retirement of RECs equal to the percentage specified by the RPS statute or pay an ACP commensurate with any shortfalls.

1. Registration of Renewable Energy Facilities

Facilities eligible for the Maryland RPS Program must be in PJM (the wholesale bulk power control area in which Maryland resides)[8] or an adjacent control area,[9] so long as the

[4] *See* Article - State Government §9–20B–05(i).

[5] Standard Offer Service (SOS) is electricity supply purchased from an electric company by the company's retail customers who cannot or choose not to transact with a competitive supplier operating in the retail market. *See* PUA §§7-501(n) and 7-510(c).

[6] An attribute is "a characteristic of a generator, such as location, vintage, emissions output, fuel, state RPS Program eligibility, etc." PJM-EIS, *GATS Operating Rules* (May 2014) at 3.

[7] Chapter 595 of the Laws of Maryland 2024.

[8] The PJM wholesale market includes all or parts of Delaware, Illinois, Indiana, Kentucky, Maryland, Michigan, New Jersey, North Carolina, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia, and the District of Columbia.

[9] A control area is an "electric system or systems, bounded by interconnection metering and telemetry, capable of controlling generation to maintain its interchange schedule with other Control Areas and contributing to frequency regulation. For the purposes of this document, a Control Area is defined in broad terms to include transmission system operations, market, and load-serving functions within a single organization. A Control Area operator may be a system operator, a transmission grid operator, or a utility." PJM-EIS, Generation Attribute Tracking System (*GATS) Operating Rules* (April 2018) at 5. For example, the multi-state area controlled by the PJM Regional

electricity produced is delivered into the PJM region. However, facilities generating electricity from solar energy, geothermal, poultry litter–to–energy, waste–to–energy, or refuse–derived fuel are eligible only if the facility is connected to the electric distribution grid serving Maryland. Energy from a thermal biomass system must be used within Maryland to qualify for the RPS program.[10] Finally, energy from raw or treated wastewater used as a heat source or sink for a heating or cooling system must be either connected with the electric distribution grid serving Maryland or used to process wastewater from Maryland residents in order to qualify.[11]

Before recommending certification of a Renewable Energy Facility (REF), Commission Staff must determine whether the facility meets the standards set forth by the RPS statute and Commission regulations (COMAR 20.61). REF applicants who qualify under Maryland's RPS Program must complete the appropriate application for REF certification posted on the Commission's RPS website.[12] In addition to the geographic requirements, applicants must also meet the fuel source requirements associated with Tier 1 or Tier 2 (*see* Table 1 below). Verification of the fuel source is completed with the aid of Energy Information Administration Form 860 (EIA-860) to validate each facility's rated nameplate capacity, fuel source(s), location, and commercial operation in-service date.[13] Facilities that co-fire a REC-eligible renewable fuel source with non-eligible fuel sources must also submit a formula or methodology to account for the proportion of total electricity generated by the eligible fuel sources, which then may be credited with RECs. In addition to obtaining Commission certification, all REFs must register with GATS to track and transact business related to RECs. The GATS account must be established with the certification number issued by the Commission upon approval of the REF application. With the passage of Senate Bill 783 in 2024, the Commission is required to: "On or before July 1, 2026, implement a revised system to review and ensure compliance with the Renewable Energy Portfolio Standard." In light of this requirement, the Commission is undergoing a process to update its existing REC application portal and procedure. Furthermore, the Commission is implementing new application requirements for REF's that qualify under the Small Solar Energy Generating System Incentive Program in accordance with updates established in Senate Bill 783. The Commission will provide updates to this implementation progress in future Renewable Energy Portfolio Standard Reports.

2. Maryland RPS Annual Percentage Requirements

To comply with the Maryland RPS Program, electricity suppliers must acquire RECs derived from Maryland-certified Tier 1 and Tier 2 renewable sources, as defined in PUA §7-701. Eligible fuel sources for Tier 1 RECs and Tier 2 RECs are listed in Table 1. Solar, geothermal,

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Transmission Operator is one control area, as is the adjacent Midwest Independent System Operator (MISO) multi-state area, and the adjacent New York ISO.

[10] There are currently no thermal biomass facilities in Maryland.

[11] PUA §7-701(s) as a result of House Bill 561 passed in 2021.

[12] REF applications are maintained by the Commission and are accessible online, available at: https://www.psc.state.md.us/electricity/description-documents-maryland-renewable-energy-portfolio-standard-program/.

[13] Submitting Form EIA-860 is a requirement under Section 13(b) of the Federal Energy Administration Act of 1974 (Public Law 93-275) for generating plants, regulated and unregulated, which have a nameplate rating of 1 MW or more, are operating or plan to operate within 5 years, and are connected to the transmission grid.

and offshore wind have their own standards within Tier 1, and these "carve-outs" are sub-sets of the Tier 1 standard.

Table 1 Eligible Tier 1 and Tier 2 Sources

Tier 1 Renewable Sources	Tier 2 Renewable Sources
• Solar, including energy from photovoltaic technologies and solar water heating systems • Wind • Qualifying Biomass • Methane from a landfill or wastewater treatment plant • Geothermal • Ocean • Fuel Cell that produces electricity from a Tier 1 source • Hydroelectric power plant less than 30 MW capacity • Poultry litter-to-energy • Waste-to-energy • Refuse–derived fuel • Thermal energy from a thermal biomass system • Raw or treated wastewater used as a heat source or sink for a heating or cooling system	• Hydroelectric power other than pump storage generation *(Note: Tier 1 RECs may be used to satisfy Tier 2 obligations)*

As shown in Table 2 below, there is a different percentage schedule corresponding to each tier and carve-out requirement comprising the Maryland RPS Program.

- The Tier 1 requirements gradually increase until peaking in 2030, after which they are maintained at those levels.

- The Tier 1 Solar carve-out requirement increases from 6 percent in 2023 to 14.5 percent by 2030.[14] This ramp-up period for the solar carve-out corresponds in part with the implementation of the community solar energy generating facilities which was established in 2015.[15] This pilot was made into a permanent program in 2023.[16] There is a potential that Solar Renewable Energy Credits (SRECs) generated by eligible community solar facilities could serve to help meet the increasing Tier 1 Solar carve-out in the coming years.

[14] Chapter 757 of the Laws of Maryland 2019.
[15] Chapter 346 of the Laws of Maryland 2015.
[16] Chapter 652 of the Laws of Maryland 2023.

- The Brighter Tomorrow Act from 2024[17] requires the Commission to establish the Small Solar Energy Generating System Incentive Program under which eligible solar systems may generate certified SRECs that have a compliance value of 150% of noncertified SRECs. The Act also extends the duration of all RECs used to comply with Maryland's RPS to five years.

- Beginning in 2017, a constant Tier 1 Offshore Wind carve-out of up to 2.5 percent commenced as part of the Tier 1 portfolio.[18] In Order No. 88192, the Commission established specific offshore wind carve-outs from 2021 through 2042 ranging from 0.60 percent to 2.03 percent. Senate Bill 516, enacted in May 2019, increased the RPS requirements to 50 percent by 2030, and established additional offshore wind carve-outs beginning in 2027.

- Beginning in 2023, a Tier 1 geothermal carve-out of up to 0.05 percent will commence as part of the Tier 1 portfolio rising to 1.0 percent in 2028.

- Maryland's Tier 2 requirement of 2.5 percent was re-established by Senate Bill 65 in 2021.

Table 2 Annual RPS Requirements by Tier[19]

Compliance Year	Tier 1 (Excluding Carve-outs)	Solar	Offshore Wind[20]	Post 2022 Geothermal	Tier 2	Total
2023	25.85%	6.00%	N/A	0.05%	2.50%	34.40%
2024	26.91%	6.50%	0.14%	0.15%	2.50%	36.20%
2025	26.59%	7.00%	1.66%	0.25%	2.50%	38.00%
2026	26.89%	8.00%	2.61%	0.50%	2.50%	40.50%
2027	18.23%	9.50%	13.02%	0.75%	2.50%	44.00%
2028	17.98%	11.00%	13.02%	1.00%	2.50%	45.50%
2029	22.98%	12.50%	13.02%	1.00%	2.50%	52.00%
2030+	21.48%	14.50%	13.02%	1.00%	2.50%	52.50%

[17] Chapter 595 of the Laws of Maryland 2024.
[18] The Maryland Offshore Wind Energy Act of 2013 (2013 Md. Laws, Ch. 003) established an offshore wind carve-out within the Tier 1 requirement. Beginning in 2017, Tier 1 may include a Commission-determined amount of offshore wind RECs (ORECs) not to exceed 2.5 percent. The project must be generating RECs in order for the obligation to begin. In the absence of a Commission-determined OREC obligation, electricity suppliers must satisfy the carve-out using RECs derived from other Tier 1 renewable sources.
[19] For an electric cooperative, the solar requirement is 2.5% in 2020 and later. For a municipal electric utility, in 2022 and later, the requirements are 20.4% for Tier 1, which includes 1.95% from solar, and the offshore wind requirement shown above. See PUA §7-703(e).
[20] This percentage includes only the Commission-approved offshore wind energy carve-out from Order No. 88192 and Order No. 90011.

At certain renewable procurement cost thresholds, an electricity supplier can request that the Commission consider a delay in scheduled Tier 1 and Tier 1 Solar RPS percentages.[21] To date, no such request has been made by electricity suppliers operating in the Maryland marketplace.

3. Maryland RPS Alternative Compliance Payment Requirements

Electricity suppliers who do not meet their RPS obligation through the retirement of eligible RECs must submit an ACP for every unit of shortfall. Table 3 presents the ACP schedule separated by tiers for each compliance year of the RPS Program moving forward.

Table 3 ACP Schedule ($/MWh)

Compliance Year	Tier 1 (Excluding Carve-outs)	Solar	Post 2022 Geothermal	Tier 2	IPL[22] Tier 1
2023	$30	$60	$100	$15	$2
2024	$27.50	$60	$100	$15	$2
2025	$25	$55	$100	$15	$2
2026	$24.75	$45	$90	$15	$2
2027	$24.50	$35	$80	$15	$2
2028	$22.50	$32.50	$65	$15	$2
2029	$22.50	$25	$65	$15	$2
2030+	$22.35	$22.50	$65	$15	$2

II. ELECTRICITY SUPPLIER COMPLIANCE REPORTS

Calendar year 2023 marked the 18th compliance year for the Maryland RPS. The RPS compliance reports submitted to the Commission by electricity suppliers, along with information obtained from GATS, provide information regarding the retired RECs and the underlying REFs (*e.g.*, type and location of generators) utilized by electricity suppliers to comply with Maryland RPS obligations.[23] RPS compliance reports were filed by 110 electricity suppliers, including: 75 competitive retail suppliers; 24 brokers or competitive electricity suppliers with zero retail electricity sales; and 11 electric companies, of which four are investor-owned utilities.

[21] PUA §7-705(e).

[22] Industrial Process Load (IPL) means the consumption of electricity by a manufacturing process at an establishment classified in the manufacturing sector under the North American Industry Classification System. Under PUA §7-705(b)(2) and COMAR 20.61.01.06.E(5), a supplier sale for IPL is required to meet the entire Tier 1 obligation for electricity sales, including solar. However, the ACP for an IPL Tier 1 non-solar shortfall and a Tier 1 Solar shortfall is the same. For IPL, there is no ACP for Tier 2 shortfalls.

[23] According to PUA §7-709, a REC can be diminished or extinguished before the expiration of three years by: the electricity supplier that received the credit; a nonaffiliated entity of the electricity supplier that purchased or otherwise received the transferred credit; or demonstrated noncompliance by the generating facility with the requirements of PUA §7-704(f). In the PJM region, the regional term of art is "retirement," which describes the process of removing a REC from circulation by the REC owner, *i.e.,* the owner "diminishes or extinguishes the REC." PJM-EIS, *GATS Operating Rules* (January 2024) at 54-56.

According to the filed compliance reports, there were approximately 56.2 million MWh of total retail electricity sales in Maryland for 2023 (down from 58.9 million MWh in 2022); 55.1 million MWh of retail electricity sales were subject to RPS compliance and 1.1 million MWh were exempt.[24] Maryland electricity suppliers retired about 7.9 million RECs in 2023, far fewer than the 16.1 million RECs retired for compliance in 2022 and the 15.2 million RECs retired in 2021. In fact, 2023 had the fewest RECs retired since 2014, while the total cost of RECs retired in 2023 was $243.8 million, down from $355.4 million in 2022. ACP prices were in many instances less expensive than REC prices, and as a result suppliers chose to pay the ACP rather than retire RECs. To illustrate the fall in retired RECs, Figure 1 shows the number of RECs retired as a percentage of retail sales each year since 2008.

Figure 1 RECs Retired as a Percent of Retail Sales

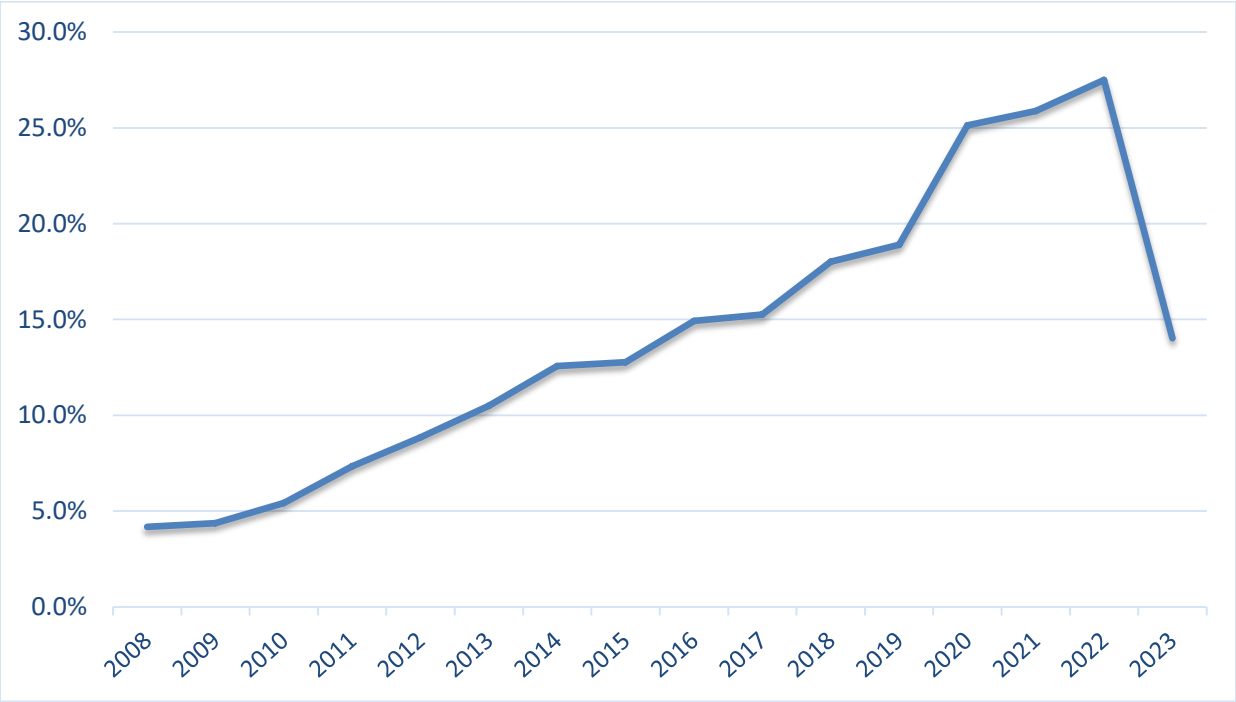


Table 4 displays the average cost per REC retired in each tier since 2008. The overall rise in REC prices is likely attributable to the increasing RPS percentages in both Maryland and other PJM states. The rise in SREC prices may be attributable to an increase in demand for SRECs due to the effects of the Clean Energy Jobs Act.[25]

[24] According to PUA §7-703(a)(2), exceptions for the RPS requirement may include: IPL which exceeds 300,000,000 kWh by a single customer in a year; regions where residential customer rates are subject to a freeze or cap (*see* PUA §7-505); or electric cooperatives under a purchase agreement that existed prior to October 1, 2004, until the expiration of the agreement. COMAR 20.61.01.06(D) exempts any sale of electricity that is marketed or otherwise represented to customers as renewable or having characteristics of a Tier 1 renewable source or Tier 2 renewable source.

[25] Chapter 673 of the Laws of Maryland 2021.

Table 4 Average Cost of RECs per Tier (2008 – 2023)

Year	Tier 1	Geothermal*	Solar	Tier 2
2008	$0.94	N/A	$345.45	$0.56
2009	$0.96	N/A	$345.28	$0.43
2010	$0.99	N/A	$328.57	$0.38
2011	$2.02	N/A	$278.26	$0.45
2012	$3.19	N/A	$201.92	$0.44
2013	$6.70	N/A	$159.71	$1.81
2014	$11.64	N/A	$144.06	$1.81
2015	$13.87	N/A	$130.39	$1.71
2016	$12.22	N/A	$110.63	$0.96
2017	$7.14	N/A	$38.18	$0.48
2018	$6.54	N/A	$31.91	$0.66
2019	$7.77	N/A	$47.26	$1.05
2020	$8.24	N/A	$66.10	$1.06
2021	$14.36	N/A	$72.59	$6.45
2022	$17.80	N/A	$57.80	$7.42
2023	$24.61	$94.47	$56.67	$10.50

* Note geothermal is only the post-2022 carve-out and does not include the geothermal included in the Tier 1 column.

As demonstrated by Table 5, the aggregated cost of compliance with the Maryland RPS Program in 2023 displays a significant increase from 2022 (from $438,832,999 in 2022 to $564,208,520 in 2023). While costs had been moderately increasing with time, a spike in prices occurred in 2021. This was driven in part by an increase in the requirement for retired Solar RECs, resulting in large quantities of ACPs needing to be purchased. Much of the increase in 2023 was driven by the unprecedented ACPs, in part due to REC prices in the market being above the ACPs when many suppliers were looking to purchase RECs. REC prices may have been above the ACP due to a general shortage of Tier 1 RECs, and the fact that surrounding states such as Pennsylvania and New Jersey have higher Tier 1 ACPs than does Maryland. Prior to 2021, reliance on ACPs had been limited. As shown in Table 5, the total cost of ACPs increased substantially from $86,584,883 in 2022 to $320,363,538 in 2023.

Table 5 Total Cost of RECs per Year (2018 – 2023)

	Tier	2018	2019	2020	2021	2022	2023
Total REC Costs	Tier 1	$56,406,247	$79,320,505	$99,836,127	$187,346,301	$246,480,883	$124,932,208
	Geo.	N/A	N/A	N/A	N/A	N/A	$104,295
	Solar	$27,351,388	$55,166,116	$122,943,987	$144,411,601	$101,384,663	$109,553,864
	Tier 2	$1,049,293	$58,899	$386,590	$959,225	$4,382,570	$9,254,616
	ACPs	$67,796	$7,730,223	$52,240	$77,129,013	$86,584,883	$320,363,538
	Total	**$84,874,724**	**$142,275,743**	**$223,218,944**	**$409,846,140**	**$438,832,999**	**$564,208,521**
Total RECs Retired	Tier 1	8,627,737	10,210,275	12,117,585	13,045,432	13,849,611	5,075,872
	Geo.	N/A	N/A	N/A	N/A	N/A	1,032
	Solar	857,232	1,167,329	1,859,976	1,989,505	1,753,987	1,933,280
	Tier 2	1,599,819	55,879	366,260	148,702	590,330	878,304
	Total	**11,084,788**	**11,433,483**	**14,343,821**	**15,183,639**	**16,193,928**	**7,888,488**
RPS % Required	Tier 1	14.30%	15.20%	22.00%	23.30%	24.60%	25.85%
	Geo.	N/A	N/A	N/A	N/A	N/A	0.05%
	Solar	1.50%	5.50%	6.00%	7.50%	5.50%	6.00%
	Tier 2	2.50%	2.50%	2.50%	2.50%	2.50%	2.50%
	Total	**18.30%**	**23.20%**	**30.50%**	**33.30%**	**32.60%**	**34.40%**

Table 6 Results of the 2023 RPS Compliance Reports

RPS Compliance Year		Tier 1	Geothermal	Solar	Tier 2	Total
2023	RPS Obligation	13,818,282	17,229	3,017,380	905,725	17,758,616
	Retired RECs	5,075,872	1,032	1,933,280	878,304	7,888,488
	ACP Required	$262,364,678	$1,619,700	$55,966,945	$412,215	$320,363,538

Note: Some electricity suppliers retired more RECs than required.

RECs are valid to demonstrate RPS compliance for the calendar year in which they were generated and in the following four calendar years.[26] Figure 2 aggregates the Maryland RPS tiers on the basis of generation year. For the 2023 compliance year, 69.0 percent of RECs retired were generated in 2023; 21.4 percent were generated in 2022; and the remaining 9.3 percent were generated in 2021. This data conveys that RECs are in high demand as they are most often retired in the year of their generation.

[26] COMAR 20.61.03.01C (unless the REC is diminished or extinguished before expiration). A REC previously had a three-year lifespan during which it may be transferred, sold, or redeemed, however, in 2024, this was increased to five years due to the passage of Senate Bill 783 in 2024 which leads to the REC being valid to demonstrate RPS compliance for the calendar year generated and in the following four calendar years, as opposed to the previous two calendar years.

Figure 2 RECs Retired in 2023 by Generation Year

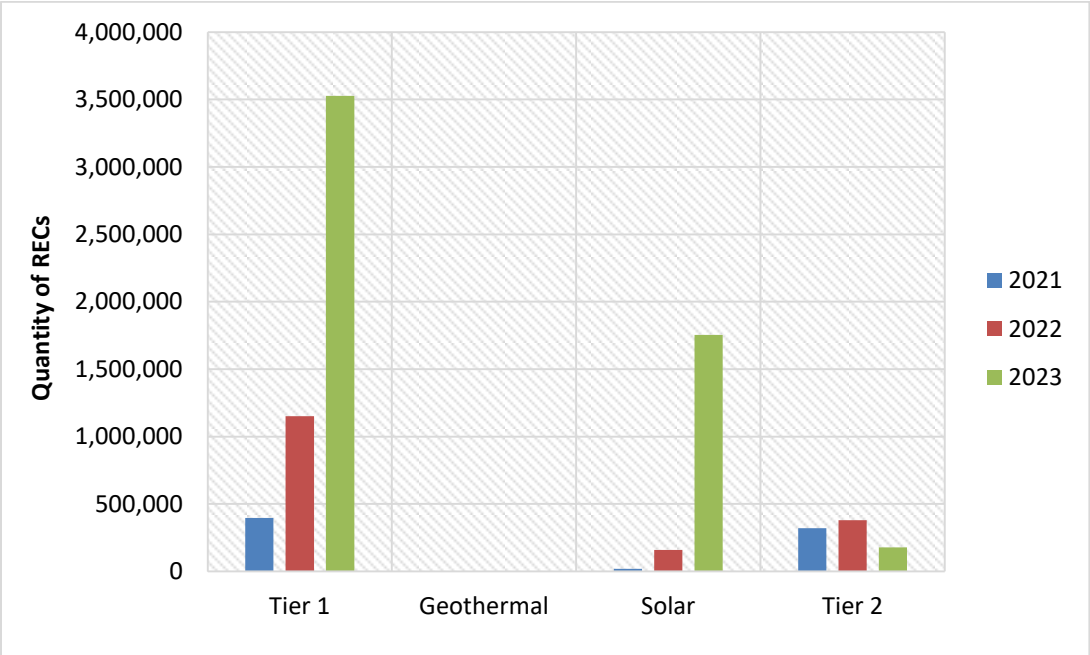
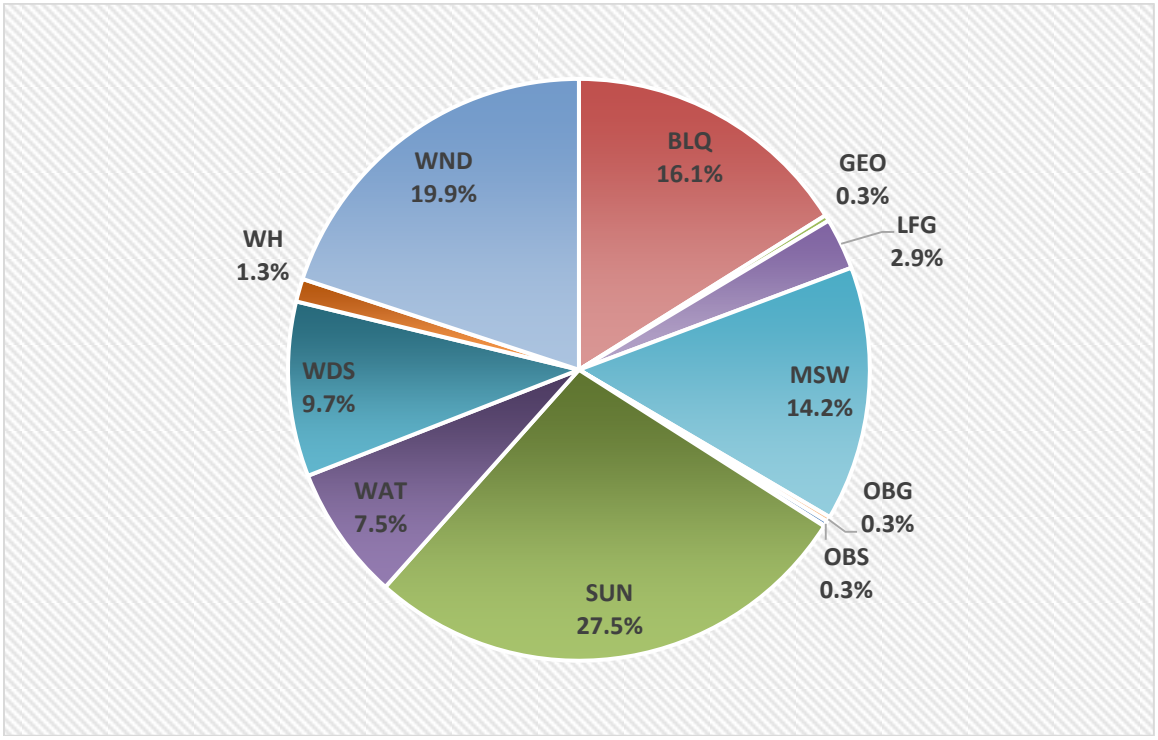


Figure 3 illustrates the fuel sources used to satisfy Tier 1 RPS requirements for the 2023 RPS compliance year. Of the Tier 1 RECs retired for 2023, the resources from which the RECs were sourced consisted primarily of solar, wind, black liquor, and municipal solid waste. Although not pictured, Tier 2 RPS requirements for the 2023 RPS compliance year were satisfied exclusively by RECs derived from hydroelectric power.

Figure 3 2023 Tier 1 Retired RECs by Fuel Source[27]

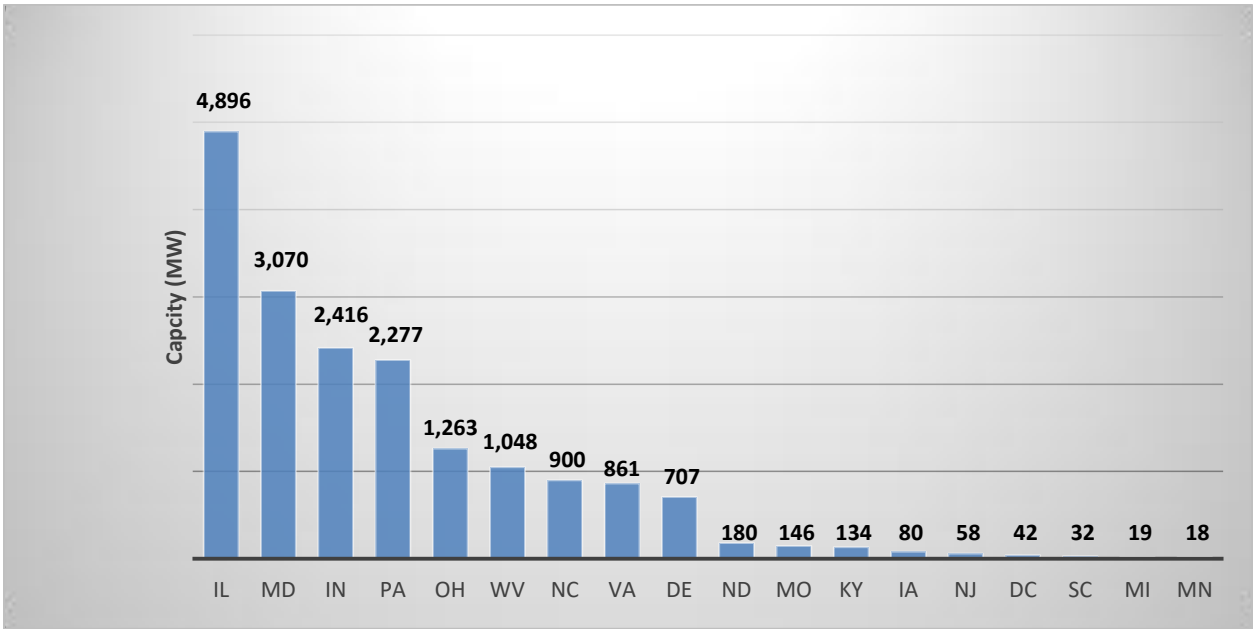


Abbreviations: BLQ, Black Liquor; LFG, Landfill Gas; GEO, Geothermal; MSW, Municipal Solid Waste; OBG, Other Biomass Gas; OBS, Biomass Solids; SUN, PV solar; WAT, Hydroelectric; WDS, WH, Waste Heat; Wood and Waste Solids; WND, Wind.

Figure 4 presents the geographical location and the total generating capacity (18,147 MW) for all Maryland RPS-certified facilities regardless of Tier. RPS requirements also exist in the surrounding states which generally support out-of-state and regional market participation. Illinois is the largest single source with over 98 percent of its registered capacity being wind generation.

[27] WAT includes Tier 1 only. Solar thermal and geothermal contributed too few RECs to be seen on the chart.

Figure 4 Total Rated Capacity by State (MW)[28]



For the 2023 compliance year,.

Figure 5 displays aggregated REC data to convey general relationships among the states that contributed RECs. For the first time, Maryland supplied the largest number of RECs purchased by retail electric suppliers (34.6 percent), followed by Virginia (20.1 percent), and North Carolina (14.4 percent). The remaining 13 states contributed a total of 30.9 percent of all RECs retired in 2023. The majority of RECs from in-State generators were sourced from Tier 1 non-solar (28.0 percent) and solar photovoltaic (70.1 percent).

[28] PJM-EIS, Generation Attribute Tracking System, Database query, (October 1, 2023). The information in this figure does not include Commission-authorized REFs that have not established a REC account with PJM GATS.

Figure 5 Number of RECs Retired by Facility Location (2023)

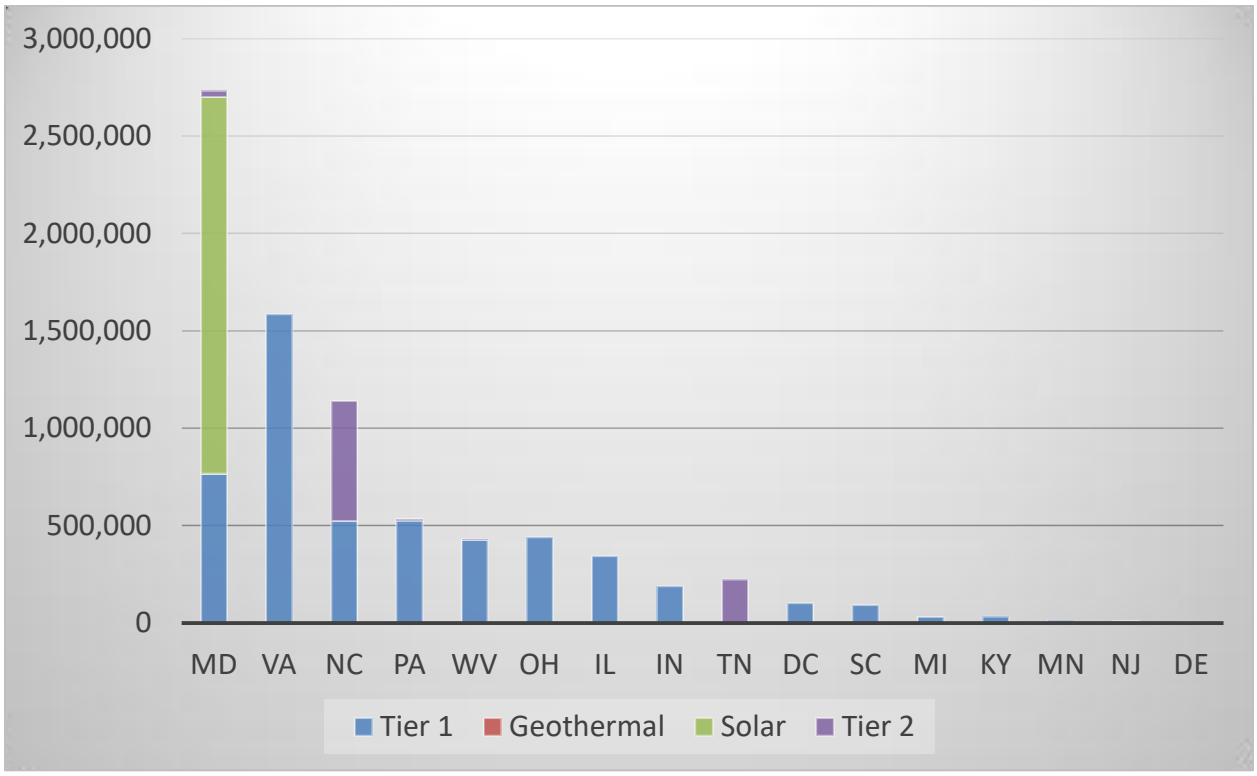


Table 7 and Table 8 provide the quantitative data in support of the previous figure.

Table 7 provides the reported levels of RECs retired by Maryland electricity suppliers in 2023 on a tier and aggregate basis whereas Table 8 provides the information on a percentage basis.

Table 7 2023 RECs Retired by State

State	Tier 1	Geothermal	Solar	Tier 2	All Tiers
MD	765,562	1,104	1,933,341	31,601	2,731,608
VA	1,584,805	0	0	0	1,584,805
NC	523,057	0	0	616,789	1,139,846
PA	524,470	0	0	10,257	534,727
WV	427,281	0	0	639	427,920
OH	439,542	0	0	0	439,542
IL	342,390	0	0	0	342,390
IN	188,563	0	0	0	188,563
TN	0	0	0	221,955	221,955
DC	100,452	0	0	0	100,452

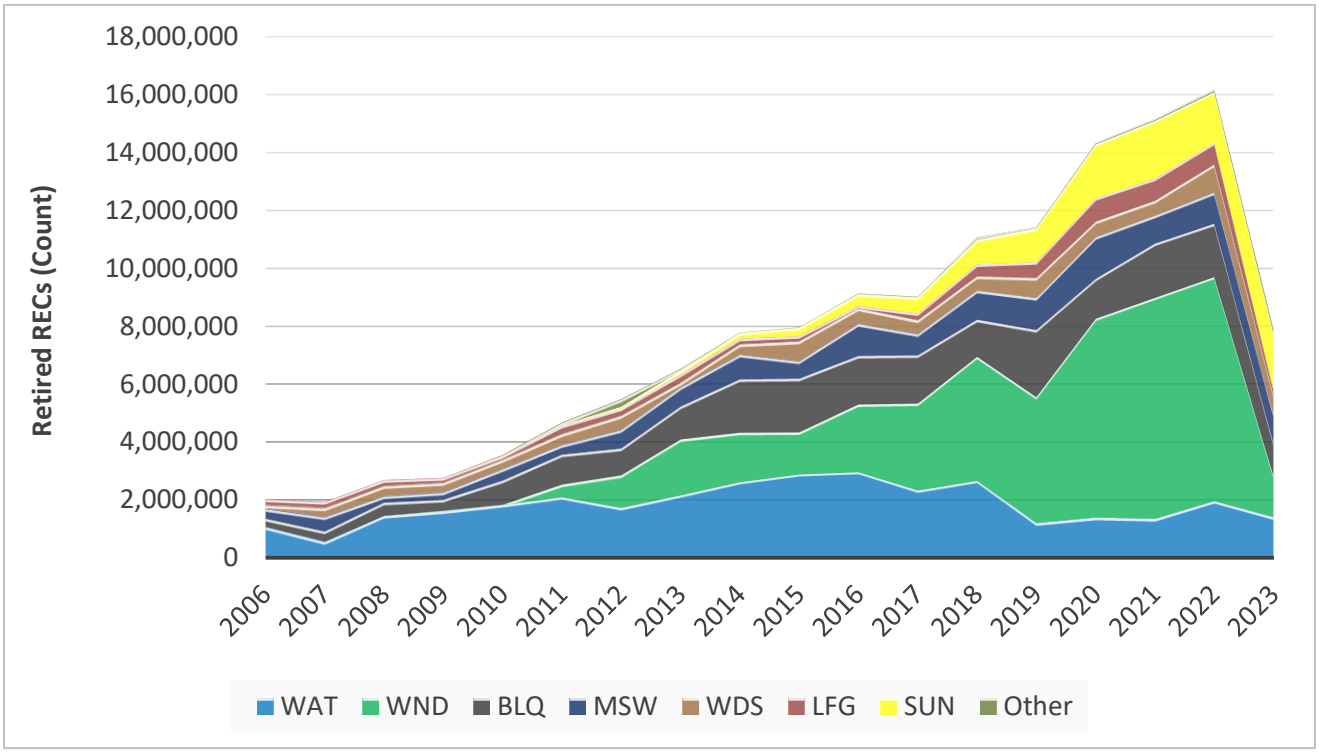
State	Tier 1	Geothermal	Solar	Tier 2	All Tiers
SC	90,865	0	0	0	90,865
MI	30,416	0	0	0	30,416
KY	32,687	0	0	0	32,687
MN	11,441	0	0	0	11,441
NJ	9,711	0	0	0	9,711
DE	4,558	0	0	0	4,558
Total	**5,075,800**	**1,104**	**1,933,341**	**881,241**	**7,891,486**

Table 8 2023 RECs Retired by State (%)

State	Tier 1	Geothermal	Solar	Tier 2	All Tiers
MD	15.1%	100.0%	100.0%	3.6%	34.6%
VA	31.2%	0.0%	0.0%	0.0%	20.1%
NC	10.3%	0.0%	0.0%	70.0%	14.4%
PA	10.3%	0.0%	0.0%	1.2%	6.8%
WV	8.4%	0.0%	0.0%	0.1%	5.4%
OH	8.7%	0.0%	0.0%	0.0%	5.6%
IL	6.7%	0.0%	0.0%	0.0%	4.3%
IN	3.7%	0.0%	0.0%	0.0%	2.4%
TN	0.0%	0.0%	0.0%	25.2%	2.8%
DC	2.0%	0.0%	0.0%	0.0%	1.3%
SC	1.8%	0.0%	0.0%	0.0%	1.2%
MI	0.6%	0.0%	0.0%	0.0%	0.4%
KY	0.6%	0.0%	0.0%	0.0%	0.4%
MN	0.2%	0.0%	0.0%	0.0%	0.1%
NJ	0.2%	0.0%	0.0%	0.0%	0.1%
DE	0.1%	0.0%	0.0%	0.0%	0.1%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

Figure 6 illustrates the growth in RECs retired in total and by fuel type from the introduction of the solar carveout of the RPS requirement in 2008. For the fourth year in a row, wind was the largest contributor of total number of RECs. Total wind RECs retired for compliance have tripled since 2016. In 2020, solar REC retirements grew to be the second largest contributor of RECs, but solar was replaced by hydroelectric in 2023, due to the reintroduction of the Tier 2 requirement. Note that the contributions from qualifying biomass sourced from agricultural crops, geothermal, other biomass liquid and gas, and solar thermal are too small to be seen on this chart.

Figure 6 RECs Retired by Fuel Type (2008 – 2023)[29]

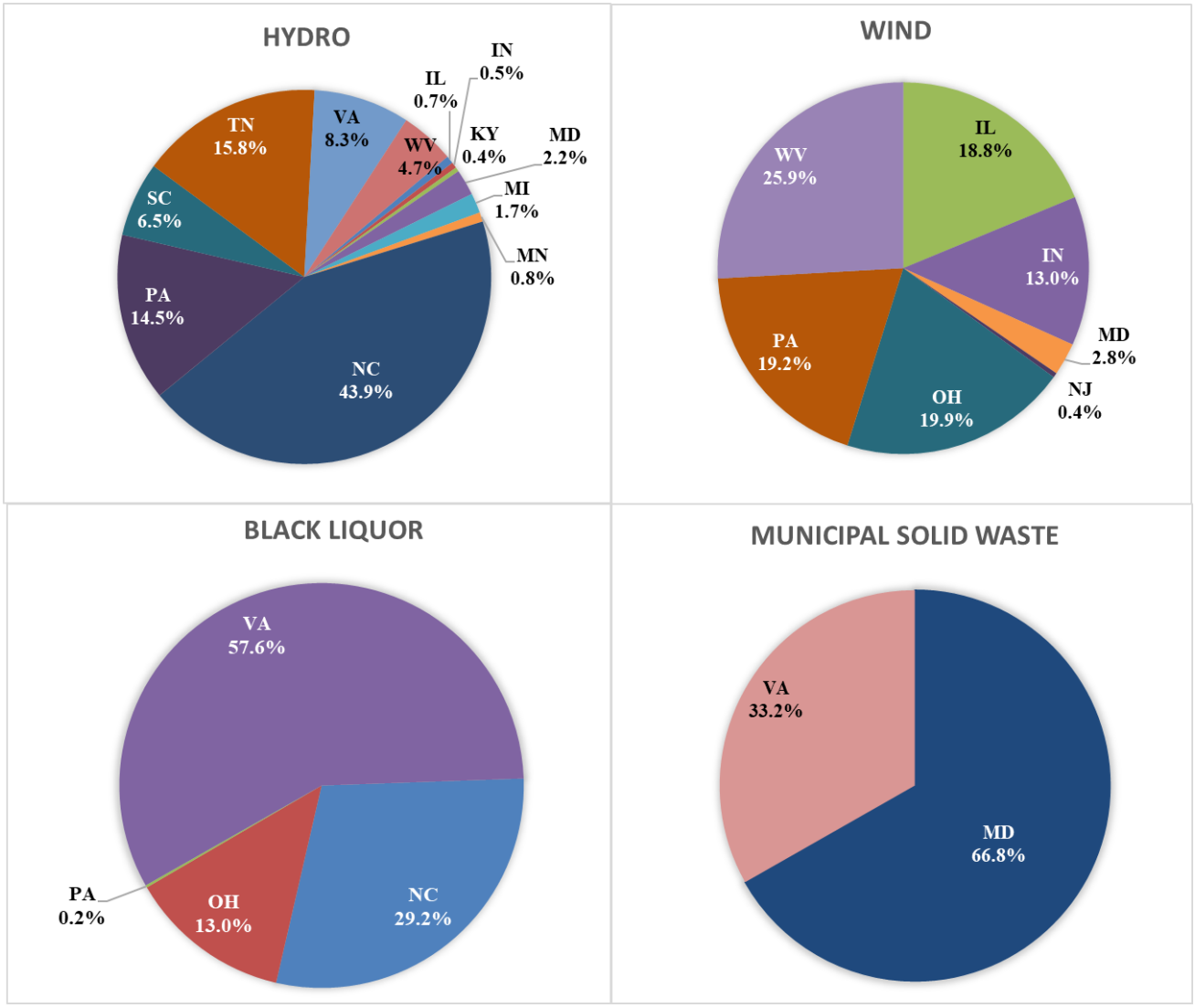


Abbreviations: BLQ, Black Liquor; LFG, Landfill Gas; MSW, Municipal Solid Waste; SUN, Solar Photovoltaic; WAT, Hydroelectric; WDS, Wood and Waste Solids; WND, Wind.

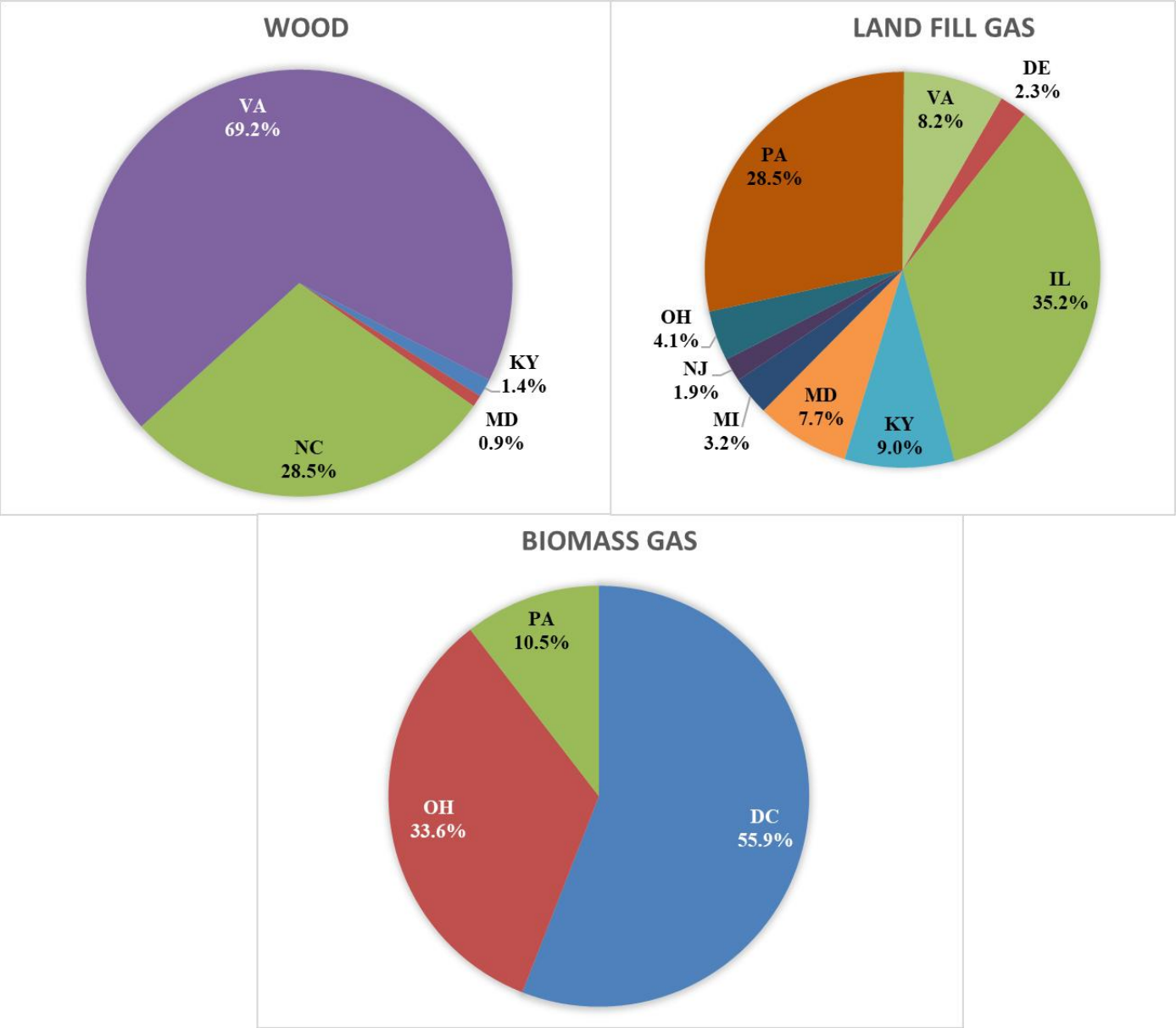
In 2023, all the RECs retired from geothermal, solar and biomass gas sources originated in Maryland, while all waste heat came from the District of Columbia. The seven remaining fuels used to comply with Maryland's 2023 RPS requirements corresponded to RECs generated in multiple other states, and Figure 7 shows the percentage contribution from each state for each of these seven fuels. Facilities located in Maryland provided 52.5 percent of municipal solid waste RECs retired for compliance in 2023. Maryland resources provided only 1.3 percent of wind RECs, 2.2 percent of hydroelectric RECs, 4.0 percent of landfill gas RECs, and 1.6 percent of wood and waste solids RECs. Maryland produced no RECs from black liquor or biomass gas.

[29] Senate Bill 65 of 2021 (Chapter 673) removed black liquor as an eligible resource. However, this law stated that a presently existing obligation or contract right may not be impaired in any way by this Act; so black liquor RECs will remain eligible until certain still existing contracts expire.

Figure 7 Percentage of RECs Generated in Each State, by Fuel (2023) [30]



[30] Additional information pertaining to the source of renewable energy used to meet Maryland's 2023 RPS compliance requirements is presented in Appendices B and C. Appendix B provides a breakdown of the *number of RECs* used by electricity suppliers according to tier, fuel type, and facility location, while Appendix C presents the *number of facilities* by tier, fuel type, and facility location that provided RECs for compliance.



III. MARYLAND RENEWABLE ENERGY FACILITIES

Implementation of the Maryland RPS Program can provide an incentive for renewable generators to locate in Maryland and generate electricity. The renewable requirement establishes a market for renewable energy, and, to the extent Maryland's geography and natural resources can be utilized to generate renewable electricity, developers may locate projects within the state. This section of the report provides information about the REFs located in Maryland in 2023.[31] Renewable energy generated in Maryland can be used both in Maryland and in other states for

[31] Specific information pertaining to the State's REFs as described herein was made available by PJM-EIS in the GATS State Agency Report.

RPS compliance purposes, and also can be sold in support of competitive retail electricity supplier product offerings (*i.e.*, green power products).

As shown in Table 9, in 2023, eligible sources located within Maryland generated approximately 1.3 million Tier 1 non-solar RECs, 2.1 million Tier 1 SRECs, and 1.8 million Tier 2 RECs. Additional analyses pertaining to the Maryland-based renewable generators is presented in Appendices C through E. Appendix C shows the disposition of RECs generated in Maryland in 2023. Appendix D provides the number of renewable energy facilities by county that are both located in Maryland and registered with GATS to participate in any one of the PJM states' RPS programs. Appendix E provides the total capacity of these facilities, broken out by county and tier.

Table 9 2023 Maryland-Generated RECs by Fuel Source

Fuel Type		RECs (Quantity)	RECs (Percent)
Tier 1	Geothermal	58,387	1.1%
	Landfill Gas	63,174	1.2%
	Municipal Solid Waste	624,627	12.0%
	Biomass Solids	19,251	0.4%
	Small Hydro	14,168	0.3%
	Wood Waste	5,186	0.1%
	Wind	481,541	9.3%
Solar	Solar PV	2,087,528	40.3%
	Solar Thermal	2,532	0.0%
Tier 2	Large Hydro	1,829,381	35.3%
Total		**4,740,092**	5,185,775

Table 10 presents additional detail regarding the disposition of Maryland-generated RECs in calendar year 2023. Approximately 35 percent of the RECs generated by renewable facilities located within Maryland during 2023 are available for potential future sale in Maryland or in other states in subsequent compliance years. Almost 47 percent of all RECs generated in Maryland were retired in 2023 to meet the RPS requirements in Maryland and various other PJM states. Labeled as "Other" in Table 10, 19 percent of RECs were used for other purposes which may include pending transfers between parties.

Table 10 Disposition of 2023 Maryland-Generated RECs

REC Tier	Available	RPS Compliance	Other	Total
Tier 1	620,031	645,850	453	1,266,334
Solar	325,062	1,764,767	231	2,090,060
Tier 2	849,719	0	979,662	1,829,381
Total	1,794,812	2,410,617	980,346	5,185,775
(%)	34.6%	46.5%	18.9%	100.0%

Source: PJM-EIS

Table 11 presents, on a state-by-state basis, the distribution of the RECs both generated in-state and retired for RPS compliance purposes. In 2023, Maryland-generated RECs were retired for compliance purposes in five jurisdictions: the District of Columbia, Delaware, Maryland, New Jersey, and Pennsylvania.

Table 11 2023 Maryland-Generated RECs Retired for RPS Compliance by State

Tier	Fuel Type	DC	DE	MD	NJ	PA	Total
Tier 1	Geothermal	-	-	14,600	-	-	14,600
	Land Fill Gas	-	-	14,113	954	4,029	19,096
	Municipal Waste	-	-	507,929	-	-	507,929
	Biomass Solids			19,251	-	-	19,251
	Small Hydro	-	-	-	8,407	-	8,407
	Wood	-	-	5,184	-	-	5,184
	Wind	-	47,996	23,387	-	-	71,383
	Subtotal	-	47,996	584,464	9,361	4,029	645,850
	Percentage	0.0%	7.4%	90.5%	1.4%	0.6%	100.0%
Solar	Solar PV	9,777	-	1,752,872	-	-	1,762,649
	Solar Thermal	-	-	2,118	-	-	2,118
	Subtotal	9,777	-	1,754,990	-	-	1,764,767
	Percentage	0.6%	0.0%	99.4%	0.0%	0.0%	100.0%
Tier 2	Large Hydro	-	-	-	-	-	-
	Subtotal	-	-	-	-	-	0
	Percentage	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
All Tiers	**Grand Total**	**9,777**	**47,996**	**2,339,454**	**9,361**	**4,029**	**2,410,617**
	Percentage	**0.4%**	**2.0%**	**97.0%**	**0.4%**	**0.2%**	**100.0%**

Source: PJM-EIS.

IV. GEOTHERMAL CARVE-OUT

In 2021, House Bill 1007[32] was signed into law which created a carve-out within Tier 1 for geothermal RECs created by a system with an in-service date of on or after January 1, 2023. The legislation refers to these as "Post–2022 Geothermal Systems" and the carve-out includes a requirement that at least 25% of the required percentage of the RPS percentage derived from post–2022 geothermal systems be derived from low and moderate income ("LMI") systems.

2023 was the first year the post-2022 geothermal carve-out was applicable, and percentage requirements were 0.0375% for non-LMI systems, and 0.0125% for LMI systems, for a total of 0.05%. This results in a REC obligation of 12,937 non LMI GRECs and 4,292 LMI GRECs. A large majority of suppliers met these obligations by paying ACPs, with only 1,032 non-LMI GRECs being retired, and no LMI GRECs. The 1,032 post-2022 GRECs were retired by just two suppliers. These shortfalls resulted in ACP payments of $1,190,500 for non-LMI GREC obligations and $429,200 for LMI GREC obligations.

More suppliers could have met the GREC obligations, as a number of post-2022 GRECs remain available, however even if all had been retired, it would only have met 47 percent of the non-LMI GREC obligation, and none of the LMI GREC obligation, as no LMI system applied for GREC certification in 2023. The lack of LMI systems may be in part because the systems approved for Post-2022 GRECs appear to be largely from upper-income families due to the costs of these systems. Data from the applications show that the average size of these homes is 4,068 square feet, and according to Redfin, the average home value was almost $850,000. The average estimated annual value of GRECs created by these systems is $4,700 with some residential systems generating over $12,000 worth of GRECs annually.

V. SMALL SOLAR ENERGY GENERATING SYSTEM INCENTIVE PROGRAM

In 2024, Senate Bill 783[33] was signed into law which established a "Small Solar Energy Generating System Incentive Program" to be administered by the Maryland Public Service Commission. The established program provides that an eligible system can apply to the Commission to become a "Certified System" and receive "Certified" SRECs which shall have a compliance value of 150% for electricity suppliers to apply towards meeting the Renewable Energy Portfolio Standards. To be eligible for this program, a system must: (1) be located in Maryland, (2) be eligible for inclusion in meeting the RPS, (3) have a generating capacity of 5 Megawatts or less, (4) be placed in service between July 1, 2024 and January 1, 2028, and (5) be a specific type of system as further specified within the statute.[34] To begin receiving "Certified" SRECs, eligible systems must submit specific application material to the Commission as specified in the statute.[35] The Commission will begin accepting applications and determining eligibility of systems no later than January 1, 2025.

[32] Chapter 164 of the Acts of 2021.
[33] Chapter 595 of the Laws of Maryland 2024.
[34] PUA §7-709.1(D)(5).
[35] PUA §7-709.1(E).

In light of the requirements to establish the Small Solar Energy Generating System Incentive Program, the Commission is undergoing a process to update its existing REC application portal and procedures. This new program will likely have an impact on Maryland's Renewable Portfolio Standard in the future and the Commission will continue to provide updates on this program in future Renewable Energy Portfolio Standard Reports.

VI. CONCLUSION

The electricity supplier compliance reports for 2023, verified by the Commission, indicate that approximately 44 percent of Maryland RPS obligations were met via the purchase and retirement of RECs with $320.4 million in ACPs. Approximately 35 percent of RECs used for compliance in 2023 came from in-state resources, up from 19 percent in 2022, RECs derived from three fuel types—solar (27.5 percent), wind (19.9 percent), and black liquor (16.1 percent)—were the predominant sources of Tier 1 compliance in 2023. Throughout this next year, the Commission will continue to: review applications from facilities requesting certification as a Maryland REF, oversee the RPS Program, and verify that the electricity suppliers in Maryland procure enough electricity generated by renewable resources. As noted in this report, compliance with the Renewable Portfolio Standard by electricity suppliers that was achieved through the purchase of ACPs (rather than the retirement of RECs) was by far the largest in the history of the RPS. The Commission will continue to monitor this matter in future reports.

APPENDICES

Appendix A 2023 Retired RECs by Facility

Facility Name	State	Fuel	Quantity	BLQ %	Tier 1
Covington Facility - MeadWestvaco Covington P	VA	BLQ	194,097	17.20%	3.82%
Domtar Paper Co LLC Plymouth NC - TG 7-9-10	NC	BLQ	219,787	19.48%	4.33%
Franklin Mill - #6 R.B./#9T.G.	VA	BLQ	196,450	17.41%	3.87%
Hopewell Mill - Gen 1	VA	BLQ	96,781	8.58%	1.91%
Kapstone Kraft Paper Corporation - Generator 1	NC	BLQ	109,313	9.69%	2.15%
Pixelle Specialty Solutions - Spring Grove - Gen 1-6	PA	BLQ	2,170	0.19%	0.04%
Pixelle Specialty Solutions -Chillicothe - T10-T13	OH	BLQ	146,532	12.99%	2.89%
West Point Mill - GEN8-12	VA	BLQ	163,029	14.45%	3.21%
		Total	**1,128,159**	**100.00%**	**22.22%**

Facility Name	State	Fuel	Quantity	LFG %	Tier 1
ACE CUMBERLAND CTY 1 LF - 11	NJ	LFG	1,567	0.78%	0.03%
AEP CLOYDS MT 1 LF – 1	VA	LFG	2,743	1.37%	0.05%
AEP ORCHARD HILLS 1 LF - 1	MI	LFG	6,387	3.18%	0.13%
Bavarian LFGTE - Bavarian	KY	LFG	8,154	4.06%	0.16%
Beecher – Beecher	IL	LFG	304	0.15%	0.01%
Blue Ridge LFGTE – 1	PA	LFG	27,279	13.58%	0.54%
Broad Mountain BTM - Parasitic Load	PA	LFG	991	0.49%	0.02%
CCIA BTM – 2	NJ	LFG	1,069	0.53%	0.02%
CID - LFG Turbines	IL	LFG	11,060	5.50%	0.22%
Croda Atlas Point CHP - Units 1 and 2	DE	LFG	4,492	2.24%	0.09%
DPL NEWLAND PARK 1 LF - 1	MD	LFG	1,298	0.65%	0.03%
DPL SOUTHERN 1 LF – 1	DE	LFG	66	0.03%	0.00%
Eastern LFG BTM – 1	MD	LFG	6,725	3.35%	0.13%
Eastern LFG BTM – 2	MD	LFG	7,388	3.68%	0.15%
FE CARBON ALUM 1 LF - 1	OH	LFG	907	0.45%	0.02%
FE LORAIN 1 LF – 1	OH	LFG	2,057	1.02%	0.04%
Frey Farm Landfill – 1	PA	LFG	9,432	4.69%	0.19%
Green Valley LFGTE - Green Valley	KY	LFG	2,543	1.27%	0.05%
Greene Valley - Landfill Gas Turbines	IL	LFG	17,132	8.53%	0.34%
Hardin County LFGTE - Hardin County	KY	LFG	1,877	0.93%	0.04%
Lake Gas Recovery - Gas Turbines	IL	LFG	4,847	2.41%	0.10%
Laurel Ridge LFGTE - Laurel Ridge	KY	LFG	2,054	1.02%	0.04%
Lorain County Power Station - Units 1-18	OH	LFG	174	0.09%	0.00%
Lycoming Landfill – 1	PA	LFG	11,997	5.97%	0.24%
Pendleton County LFGTE - Pendleton County	KY	LFG	3,387	1.69%	0.07%
Pennsauken Landfill - Pennsauken Landfill	NJ	LFG	1,231	0.61%	0.02%
PN SHIPPENSBURG 1 LF - 1	PA	LFG	3,037	1.51%	0.06%
Prairie View RDF Landfill Gas-to-Energy	IL	LFG	14,708	7.32%	0.29%

Rochelle Energy LLC - Rochelle Energy LLC	IL	LFG	845	0.42%	0.02%
Settlers Hill - LFG Turbines	IL	LFG	13,563	6.75%	0.27%
Suburban Landfill Generator - Suburban Landfill	OH	LFG	5,104	2.54%	0.10%
Tullytown Landfill Gas-to-Energy Facility - Tullytown	PA	LFG	4,532	2.26%	0.09%
VP BETHEL 1 LF – 1	VA	LFG	2,205	1.10%	0.04%
VP CHARLES CITY 1 CT – 1	VA	LFG	18	0.01%	0.00%
VP CHESTERFIELD 1 LF – 1	VA	LFG	5,456	2.72%	0.11%
VP OCCOQUAN 2 LF – 2	VA	LFG	6,063	3.02%	0.12%
VP VIRGINIA BEACH 1 LF - 1	VA	LFG	21	0.01%	0.00%
Woodland - LFG Engines	IL	LFG	8,220	4.09%	0.16%
		Total	**200,933**	**100.00%**	**3.96%**

Facility Name	**State**	**Fuel**	**Quantity**	**MSW %**	**Tier 1**
Covanta Fairfax Energy - 1	VA	MSW	329,763	33.23%	6.50%
Montgomery County Resource Recovery - GEN1	MD	MSW	283,616	28.58%	5.59%
Montgomery County Resource Recovery - Gen 2	MD	MSW	12,126	1.22%	0.24%
Wheelabrator Baltimore Refuse - GEN1	MD	MSW	366,929	36.97%	7.23%
		Total	**992,434**	**100.00%**	**19.55%**

Facility Name	**State**	**Fuel**	**Quantity**	**OBG %**	**Tier 1**
Allentown Wastewater Treatment Plant	PA	OBG	2,038	10.47%	0.04%
Buckeye BioGas - Wooster - OARDC	OH	OBG	3,575	18.36%	0.07%
DC Water Bailey Bioenergy Facility - GTG1	DC	OBG	2,169	11.14%	0.04%
DC Water Bailey Bioenergy Facility - GTG2	DC	OBG	4,179	21.46%	0.08%
DC Water Bailey Bioenergy Facility - GTG3	DC	OBG	4,542	23.33%	0.09%
Haviland Energy - Haviland	OH	OBG	2,967	15.24%	0.06%
		Total	**19,470**	**100.00%**	**0.38%**

Facility Name	**State**	**Fuel**	**Quantity**	**OBG %**	**Tier 1**
Pocomoke Drying Plant - Pocomoke Dryer	MD	OBS	11,638	60.45%	0.23%
Salisbury Drying Plant - Salisbury Dryer	MD	OBS	7,613	39.55%	0.15%
		Total	**19,251**	**100.00%**	**0.38%**

Facility Name	**State**	**Fuel**	**Quantity**	**WAT %**	**Tier 1**
AEP BUCK-BYLLESBY 1 H - 1	VA	WAT	41,271	7.87%	0.81%
AEP FRIES HYDRO – 1	VA	WAT	3,695	0.70%	0.07%
Allegheny 5 – 1	PA	WAT	12,928	2.47%	0.25%
Allegheny Lock& Dam No 6 Hydro Project – 2	PA	WAT	18,174	3.47%	0.36%
Allegheny River Lock and Dam No. 8 -	PA	WAT	74,019	14.12%	1.46%
Allegheny River Lock and Dam No. 9	PA	WAT	79,951	15.25%	1.57%
AP MISC HYDRO H – 1	WV	WAT	5,784	1.10%	0.11%
Appomattox River Associates, LP. - Brasfield	VA	WAT	108	0.02%	0.00%
Banister Hydro, Inc - Halifax Hydroelectric Project	VA	WAT	26	0.00%	0.00%

Beaver Valley Patterson Dam - 1	PA	WAT	1,448	0.28%	0.03%
Berrien Springs - 1A	MI	WAT	8,154	1.55%	0.16%
Big Shoals Hydro - Unit # 1	VA	WAT	510	0.10%	0.01%
Buchanan – 1	MI	WAT	4,862	0.93%	0.10%
Buzzards Roost Hydro - IMPORT Gen1-3	SC	WAT	37,605	7.17%	0.74%
City of Radford Municipal Hydroelectric Project	VA	WAT	2,457	0.47%	0.05%
City of Rock Falls Upper Sterling Hydro	IL	WAT	6,282	1.20%	0.12%
Coleman Falls Hydro - Unit # 1	VA	WAT	4,566	0.87%	0.09%
Constantine – 1	MI	WAT	2,285	0.44%	0.05%
Cushaw – 1	VA	WAT	14,358	2.74%	0.28%
Dixon Hydroelectric Dam - Dixon Hydroelectric Dam	IL	WAT	88	0.02%	0.00%
Elkhart – 1	IN	WAT	829	0.16%	0.02%
French Paper Co - Unit 1 - 4	MI	WAT	6,330	1.21%	0.12%
Great Falls Hydro Project - HY1	NJ	WAT	194	0.04%	0.00%
Holcomb Rock Hydro - Unit # 1	VA	WAT	5,518	1.05%	0.11%
Lockhart Power Hydro - IMPORT Gens1-5	SC	WAT	53,260	10.16%	1.05%
Lockport Powerhouse Hydroelectric Facility	IL	WAT	3,005	0.57%	0.06%
London – 1	WV	WAT	26,767	5.10%	0.53%
Marmet – 1	WV	WAT	10,986	2.10%	0.22%
Mottville – 1	MI	WAT	2,398	0.46%	0.05%
Niagara – 1	VA	WAT	3,329	0.63%	0.07%
Pinnacles Hydro Power Project - Units 1-3	VA	WAT	17,877	3.41%	0.35%
Ravenna Hydroelectric Project - Ravenna 1,2,3,4,5	KY	WAT	5,268	1.00%	0.10%
Reusens – 1	VA	WAT	7,453	1.42%	0.15%
Schoolfield Dam - Schoolfield	VA	WAT	8,568	1.63%	0.17%
Snowden Hydro Site - Unit # 1	VA	WAT	7,000	1.33%	0.14%
Swift Creek Hydro, Inc. - Lakeview Hydroelectic	VA	WAT	75	0.01%	0.00%
Twin Branch – 1	IN	WAT	6,314	1.20%	0.12%
Twin Cities Hydro LLC - Eligible - Units 1-4	MN	WAT	11,441	2.18%	0.23%
Winfield – 1	WV	WAT	21,828	4.16%	0.43%
York Haven – 1	PA	WAT	2,766	0.53%	0.05%
Yough Hydro Power – 1	PA	WAT	4,613	0.88%	0.09%
		Total	**524,390**	**100.00%**	**10.33%**

Facility Name	**State**	**Fuel**	**Quantity**	**WDS %**	**Tier 1**
Covington Facility - MeadWestvaco Covington	VA	WDS	38,424	5.64%	0.76%
Cox Waste-to-Energy Cogeneration Plant	KY	WDS	9,404	1.38%	0.19%
Domtar Paper Co LLC Plymouth NC - TG 7-9-10	NC	WDS	168,532	24.75%	3.32%
Eastern Correctional Institution	MD	WDS	6,127	0.90%	0.12%
Hopewell Mill - Gen 1	VA	WDS	21,622	3.18%	0.43%
Kapstone Kraft Paper Corporation - Generator 1	NC	WDS	25,425	3.73%	0.50%
VP SOUTH BOSTON 1 F - 1	VA	WDS	375,139	55.10%	7.39%
West Point Mill - GEN8-12	VA	WDS	36,183	5.31%	0.71%

		Total	**680,856**	**100.00%**	**13.41%**
Facility Name	**State**	**Fuel**	**Quantity**	**WH %**	**Tier 1**
Blue Plains Wastewater Treatment Plant Digestors	DC	WH	78,742	87.92%	1.55%
DC Water Bailey Bioenergy Facility - CHP Steam	DC	WH	8,873	9.91%	0.17%
HQO - Sharc Wastewater Thermal Facility	DC	WH	1,947	2.17%	0.04%
		Total	89,562	100.00%	1.76%
Facility Name	**State**	**Fuel**	**Quantity**	**WND %**	**Tier 1**
AE ONTARIO WF – 1	NJ	WND	2,423	0.17%	0.05%
AEP BITTER RIDGE 1 WF - 1	IN	WND	657	0.05%	0.01%
AEP BLUE CREEK 3 WF – 3	OH	WND	9,122	0.65%	0.18%
AEP BLUFF POINT 2 WF - 2	IN	WND	16,802	1.20%	0.33%
AEP FOWLER RIDGE 1B WF - 2	IN	WND	1,057	0.08%	0.02%
AEP FOWLER RIDGE 2-1 WF - 21	IN	WND	29,839	2.13%	0.59%
AEP FOWLER RIDGE 2-3 WF - 23	IN	WND	11,136	0.80%	0.22%
AEP FOWLER RIDGE 3 WF - 3	IN	WND	16,348	1.17%	0.32%
AEP HOG CREEK 1 WF – 1	OH	WND	195,478	13.98%	3.85%
AEP MEADOW LAKE 1 WF - 1	IN	WND	2,444	0.17%	0.05%
AEP MEADOW LAKE 2 WF - 2	IN	WND	5,456	0.39%	0.11%
AEP MEADOW LAKE 3 WF - 3	IN	WND	18,301	1.31%	0.36%
AEP MEADOW LAKE 4 WF - 4	IN	WND	21,716	1.55%	0.43%
AEP MEADOW LAKE 5 WF - 5	IN	WND	810	0.06%	0.02%
AEP MEADOW LAKE 6 WF - 6	IN	WND	17,024	1.22%	0.34%
AEP TRISHE 1 WF – 1	OH	WND	7,482	0.54%	0.15%
AEP WILDCAT 1A WF – 1	IN	WND	10,418	0.75%	0.21%
AEP WILDCAT 1B WF – 2	IN	WND	6,993	0.50%	0.14%
AMP Wind Farm / OMEGA JV 6 - AMP Wind Farm	OH	WND	259	0.02%	0.01%
AP BEECH RIDGE 1 WF – 1	WV	WND	18,078	1.29%	0.36%
AP GREENLAND GAP 1 WF - 1	WV	WND	108,555	7.76%	2.14%
AP PINNACLE 1 WF – 1	WV	WND	202,517	14.48%	3.99%
AP ROTH ROCK 1 WF – 1	MD	WND	39,561	2.83%	0.78%
Ball Metal Beverage Container Corp. - Zephyr Wind	OH	WND	8,146	0.58%	0.16%
Bishop Hill Wind Farm – 1	IL	WND	37,918	2.71%	0.75%
COM ADAM 1 WF – 1	IL	WND	1,200	0.09%	0.02%
COM BLOOMING GROVE 1 WF1 - 1	IL	WND	12,188	0.87%	0.24%
COM BRIGHT STALK 1 WF - 1	IL	WND	3,443	0.25%	0.07%
COM CAMP GROVE 1 WF - 1	IL	WND	124	0.01%	0.00%
COM CAMP GROVE 2 WF - 2	IL	WND	21,126	1.51%	0.42%
COM CAYUGA RIDGE 1 WF - 1	IL	WND	13,306	0.95%	0.26%
COM GRAND RIDGE 2 WF - 2	IL	WND	4,317	0.31%	0.09%
COM GRAND RIDGE 3 WF - 3	IL	WND	4,013	0.29%	0.08%
COM GREEN RIVER 1 WF - 1	IL	WND	4,638	0.33%	0.09%

COM GREEN RIVER 2 WF - 2	IL	WND	2,721	0.19%	0.05%
COM HILLTOPPER 1 WF - 1	IL	WND	1,969	0.14%	0.04%
COM LONE TREE 3 WF – 3	IL	WND	614	0.04%	0.01%
COM MINONK 1 WF – 1	IL	WND	6,000	0.43%	0.12%
COM OTTER CREEK 1 WF - 1	IL	WND	26,833	1.92%	0.53%
COM RADFORDS RUN 1 WF - 1	IL	WND	55,837	3.99%	1.10%
COM TOP CROP 2 WF – 2	IL	WND	1,031	0.07%	0.02%
COM WALNUT RIDGE 1 WF - 1	IL	WND	65,000	4.65%	1.28%
COM WHITNEY HILL 2 WF - 2	IL	WND	58	0.00%	0.00%
Findlay Wind Farm - Findlay Wind Farm	OH	WND	5,573	0.40%	0.11%
Fowler Ridge II Wind Farm - Vectren - Vectren - FR2	IN	WND	22,419	1.60%	0.44%
Harpster Wind - Harpster Wind	OH	WND	2,115	0.15%	0.04%
Haviland Wind Farm - WTG A	OH	WND	4,357	0.31%	0.09%
Haviland Wind Farm - WTG B	OH	WND	3,927	0.28%	0.08%
Haviland Wind Farm - WTG C	OH	WND	3,565	0.25%	0.07%
Holcim-Paulding Wind Project - Holcim-Paulding	OH	WND	8,643	0.62%	0.17%
Jersey-Atlantic Wind, LLC - 1-5	NJ	WND	3,227	0.23%	0.06%
PN ARMENIA MOUNTAIN 1 WF - 1	PA	WND	3,719	0.27%	0.07%
PN HIGHLAND NORTH 2 WF - 2	PA	WND	556	0.04%	0.01%
PN LAUREL HILLS 1 WF - 1	PA	WND	2,802	0.20%	0.06%
PN LOOKOUT 1 WF – 1	PA	WND	85,959	6.15%	1.69%
PN MEHOOPANY 2 WF - 2	PA	WND	73,154	5.23%	1.44%
PN NORTH ALLEGHENY 2 WF - 2	PA	WND	49,119	3.51%	0.97%
PN SANDY RIDGE 1 WF - 1	PA	WND	5,000	0.36%	0.10%
PN STONY CREEK 1 WF - 1	PA	WND	48,786	3.49%	0.96%
Valfilm Wind Project - Valfilm Wind Project	OH	WND	4,825	0.35%	0.10%
VP NEW CREEK 1 WF – 1	WV	WND	32,766	2.34%	0.65%
Whirlpool Corporation - Greenville Wind Farm	OH	WND	7,317	0.52%	0.14%
Whirlpool Corporation - Ottawa Wind Farm	OH	WND	2,918	0.21%	0.06%
Whirlpool Corporation-Marion Wind Farm	OH	WND	6,745	0.48%	0.13%
Zephyr Wind - Zephyr Wind	OH	WND	7,754	0.55%	0.15%
		Total	**1,398,204**	**100.00%**	**27.54%**

Facility Name	**State**	**Fuel**	**Quantity**	**WAT %**	**Tier 2**
AEP CALDERWOOD 1 H - 1	TN	WAT	77,399	8.78%	8.78%
AEP CHEOAH 1 H – 1	NC	WAT	128,713	14.61%	14.61%
Calderwood - Eligible – 1	TN	WAT	56,406	6.40%	6.40%
Cheoah - Eligible – 1	NC	WAT	129,132	14.65%	14.65%
Chilhowee - Eligible - 1-3	TN	WAT	88,150	10.00%	10.00%
Conowingo – 99	MD	WAT	31,601	3.59%	3.59%
Covanta New Martinsville Energy - 1	WV	WAT	639	0.07%	0.07%
Falls – IMPORT	NC	WAT	53,009	6.02%	6.02%
High Rock – IMPORT	NC	WAT	32,260	3.66%	3.66%

Lake Lynn Power Station - 1	PA	WAT	54	0.01%	0.01%
Narrows – IMPORT	NC	WAT	159,820	18.14%	18.14%
Piney – 31	PA	WAT	1,822	0.21%	0.21%
Safe Harbor – 6	PA	WAT	337	0.04%	0.04%
Safe Harbor – 8	PA	WAT	8,044	0.91%	0.91%
Santeetlah - Eligible - 1-2	NC	WAT	72,327	8.21%	8.21%
Tuckertown – IMPORT	NC	WAT	41,528	4.71%	4.71%
		Total	**881,241**	**100.00%**	**100.00%**

Tier 1 REC Total	5,076,904
SREC Total	1,933,341
Tier 2 REC Total	881,241
Grand Total	7,891,486

*Neither solar nor geothermal facilities are represented in this table. In 2023, 81,567 facilities produced 1,933,341 SRECs, and 1,134 facilities produced 23,645 GRECs.

Appendix B Location of Facilities that Provided RECs for 2023 RPS Compliance

	DC	DE	IL	IN	KY	MD	MI	MN	NC	NJ	OH	PA	SC	TN	VA	WV	Total
Tier 1																	
Black Liquor	-	-	-	-	-	-	-	-	2	-	1	1	-	-	4	-	8
Geothermal	-	-	-	-	-	1,134	-	-	-	-	-	-	-	-	-	-	1,134
Landfill Gas	-	2	8	-	5	3	1	-	-	2	4	6	-	-	6	-	37
Municipal Solid Waste	-	-	-	-	-	2	-	-	-	-	-	-	-	-	1	-	3
Other Biomass Gas	1	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	4
Other Biomass Solids	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
Small Hydro	-	-	3	2	1	-	5	1	-	1	-	7	2	-	15	4	41
Waste Heat	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Wood Waste	-	-	-	-	1	1	-	-	2	-	-	-	-	-	4	-	8
Wind	-	-	18	12	-	1	-	-	-	1	14	8	-	-	-	4	58
Tier 1 Solar																	
Solar PV	-	-	-	-	-	80,856	-	-	-	-	-	-	-	-	-	-	80,856
Solar Thermal	-	-	-	-	-	720	-	-	-	-	-	-	-	-	-	-	720
Tier 2																	
Large Hydro	-	-	-	-	-	1	-	-	6	-	-	3	-	2	-	1	13
Total	4	2	29	14	7	82,720	6	1	10	4	21	26	2	2	30	9	82,887

Note: In order to prevent double counting, facilities using multiple fuels are only listed under their primary fuel.

Appendix C Disposition of 2023 Vintage RECs Generated in Maryland

Fuel Type and Tier	RECs Retired for RPS Compliance by State							Available	Other	Total RECs Generated
	DC	DE	MD	NJ	PA	VA	Total			
Geothermal	-	-	-	-	-	26	14,600	43,787	-	58,387
Landfill Gas	-	-	14,600	-	-	-	19,096	44,078	-	63,174
Municipal Solid Waste	-	-	14,113	954	4,029	65,000	507,929	116,698	-	624,627
Biomass Solids	-	-	507,929	-	-		19,251	-	-	19,251
Small Hydro	-	-	19,251	-	-	-	8,407	5,761	-	14,168
Wind	-	-	-	8,407	-	-	71,383	409,705	453	481,541
Wood Waste	-	47,996	23,387	-	-	-	5,184	2	-	5,186
Tier 1 Non-solar Total	-	-	5,184	-	-	65,026	645,850	620,031	453	1,266,334
Solar PV	-	47,996	584,464	9,361	4,029	-	1,762,649	324,648	231	2,087,528
Solar Thermal	9,777	-	1,752,872	-	-	-	2,118	414	-	2,532
Tier 1 Solar Total	-	-	2,118	-	-	-	1,764,767	325,062	231	2,090,060
Large Hydro	9,777	-	1,754,990	-	-	701,132	-	849,719	979,662	1,829,381
Tier 2 Total	-	-	-	-	-	701,132	-	849,719	979,662	1,829,381
Grand Total	9,777	47,996	2,339,454	9,361	4,029	9,777	2,410,617	1,794,812	980,346	5,185,775

Appendix D Number of Renewable Energy Facilities Located in Maryland

Maryland County	Tier 1	Solar	Tier 2	Total
Allegany	-	84	-	84
Anne Arundel	160	10,795	-	10,955
Baltimore	344	10,024	-	10,368
Baltimore City	13	1,502	-	1,515
Calvert	34	1,080	-	1,114
Caroline	-	430	-	430
Carroll	51	2,757	-	2,808
Cecil	48	2,057	-	2,105
Charles	21	3,601	-	3,622
Dorchester	2	442	-	444
Frederick	96	3,697	-	3,793
Garrett	6	76	-	82
Harford	266	4,897	1	5,164
Howard	171	5,331	-	5,502
Kent	6	418	-	424
Montgomery	137	15,319	-	15,456
Prince Georges	35	24,698	-	24,733
Queen Annes	10	849	-	859
Somerset	1	352	-	353
St Mary's	17	1,889	-	1,906
Talbot	6	327	-	333
Washington	68	1,345	-	1,413
Wicomico	4	1,409	-	1,413
Worcester	4	621	-	625
Total	**1,500**	**94,000**	**1**	**95,501**

Note: This list includes all renewable generators that are both: 1) located within Maryland, and 2) registered to participate in any one of the PJM states' renewable energy programs as of July 1, 2024.

Appendix E Capacity of Renewable Energy Facilities Located in Maryland (MW)

Maryland County	Tier 1	Solar	Tier 2	Total
Allegany	-	6.3	-	6.3
Anne Arundel	8.7	165.7	-	174.4
Baltimore	81.6	170.1	-	251.7
Baltimore City	0.9	29.9	-	30.9
Calvert	1.4	13.8	-	15.2
Caroline	-	14.7	-	14.7
Carroll	1.8	73.3	-	75.1
Cecil	1.8	52.6	-	54.3
Charles	0.9	90.7	-	91.6
Dorchester	0.0	78.1	-	78.1
Frederick	3.3	108.7	-	112.0
Garrett	210.0	15.3	-	225.3
Harford	10.3	87.4	474.0	571.7
Howard	7.5	127.2	-	134.8
Kent	0.2	22.8	-	23.0
Montgomery	83.7	187.4	-	271.1
Prince George's	14.5	342.0	-	356.4
Queen Anne's	0.5	148.3	-	148.9
Somerset	3.8	154.5	-	158.3
St. Mary's	-	-	-	-
Talbot	69.4	15.1	-	84.6
Washington	2.6	100.2	-	102.7
Wicomico	13.4	51.3	-	64.7
Worcester	7.4	25.8	-	33.2
Total	**523.7**	**2,081.3**	**474.0**	**3,078.9**

Note: This list includes all renewable generators that are both: 1) located within Maryland, and 2) registered to participate in any one of the PJM states' renewable energy programs as of July 1, 2024.

Appendix F Maryland Certified Renewable Energy Facilities[36]

Plant Name	State	Date Online	Maryland
ACE CUMBERLAND CTY 1 LF	NJ	11/01/2008	MD-40139-LFG-01
AE ONTARIO WF	NJ	12/01/2005	MD-20166-WND-01
AEP BITTER RIDGE 1 WF	IN	09/01/2020	MD-20208-WND-01
AEP BLUE CREEK 3 WF	OH	10/01/2011	MD-20141-WND-01
AEP BLUFF POINT 2 WF	IN	09/01/2017	MD-20182-WND-01
AEP BUCK-BYLLESBY 1 H	VA	01/01/1912	MD-90204-WAT-01
AEP CLOYDS MT 1 LF	VA	12/01/2014	MD-40197-LFG-01
AEP ELKHART 1 LF	IN	10/01/2010	MD-40206-LFG-01
AEP FOWLER RIDGE 1A WF	IN	02/01/2009	MD-20112-WND-01
AEP FOWLER RIDGE 1B WF	IN	02/01/2009	MD-20112-WND-01
AEP FOWLER RIDGE 1C WF	IN	02/01/2009	MD-20112-WND-01
AEP FOWLER RIDGE 2-1 WF	IN	12/01/2009	MD-20138-WND-01
AEP FOWLER RIDGE 2-2 WF	IN	12/01/2009	MD-20138-WND-01
AEP FOWLER RIDGE 2-3 WF	IN	12/01/2009	MD-20138-WND-01
AEP FOWLER RIDGE 3 WF	IN	02/01/2009	MD-20139-WND-01
AEP FOWLER RIDGE 4 WF	IN	12/01/2015	MD-20172-WND-01
AEP FRIES HYDRO	VA	01/01/1933	MD-90177-WAT-01
AEP GLEN FERRIS 1 H	WV	12/01/2011	MD-90220-WAT-01
AEP HEADWATERS 1 WF	IN	10/01/2014	MD-20163-WND-01
AEP HEADWATERS 2 WF	IN	01/01/2021	MD-20216-WND-01
AEP HOG CREEK 1 WF	OH	12/01/2017	MD-20186-WND-01
AEP JAY COUNTY 1 LF	IN	04/01/2005	MD-40205-LFG-01
AEP MEADOW LAKE 1 WF	IN	10/01/2009	MD-20131-WND-01
AEP MEADOW LAKE 2 WF	IN	06/01/2010	MD-20132-WND-01
AEP MEADOW LAKE 3 WF	IN	08/01/2010	MD-20133-WND-01
AEP MEADOW LAKE 4 WF	IN	10/01/2010	MD-20134-WND-01
AEP MEADOW LAKE 5 WF	IN	07/01/2017	MD-20181-WND-01
AEP MEADOW LAKE 6 WF	IN	11/01/2018	MD-20193-WND-01
AEP ORCHARD HILLS 1 LF	MI	01/01/2013	MD-40201-LFG-01
AEP PAULDING 3 WF	OH	11/01/2016	MD-20177-WND-01
AEP PAULDING 41 WF	OH	01/01/2020	MD-20215-WND-01
AEP PAULDING 42 WF	OH	03/01/2020	MD-20215-WND-01

[36] This list excludes solar facilities, none of which was installed prior to 1998. Also excluded is geothermal, none of which was installed prior to 2007. A full list of facilities can be found here: https://gats.pjm-eis.com/gats2/PublicReports/RenewableGeneratorsRegisteredinGATS.

AEP SCIOTO RIDGE 1 WF	OH	10/01/2020	MD-20213-WND-01
AEP SUMMERSVILLE 1-2 H	WV	01/01/2001	MD-90178-WAT-02
AEP TIMBER2 1 WF	OH	06/01/2011	MD-20221-WND-01
AEP TRISHE 1 WF	OH	08/01/2018	MD-20189-WND-01
AEP WILDCAT 1A WF	IN	10/01/2012	MD-20158-WND-01
AEP WILDCAT 1B WF	IN	10/01/2012	MD-20158-WND-01
Allegheny 5	PA	10/01/1988	MD-90180-WAT-01
Allegheny Lock& Dam No 6 Hydro Project	PA	01/01/1989	MD-90181-WAT-01
Allegheny River Lock and Dam No. 8	PA	11/01/1990	MD-90799-WAT-01
Allegheny River Lock and Dam No. 9	PA	11/01/1990	MD-90798-WAT-01
Allentown Wastewater Treatment Plant	PA	07/01/2014	MD-40187-OBG-01
AMP Wind Farm / OMEGA JV 6	OH	12/01/2004	MD-20183-WND-01
AP ARDEN 1 LF	PA	01/01/2009	MD-40145-LFG-01
AP BEECH RIDGE 1 WF	WV	01/01/2010	MD-20137-WND-01
AP BEECH RIDGE 2 WF	WV	03/01/2020	MD-20203-WND-01
AP BLACK ROCK 1 WF	WV	10/01/2021	MD-20217-WND-01
AP CRITERION 1 WF	MD	12/01/2010	MD-20124-WND-01
AP FAIR WIND 2 WF	MD	11/01/2015	MD-20170-WND-01
AP FOURMILE RIDGE 1 WF	MD	12/01/2014	MD-20167-WND-01
AP GREENLAND GAP 1 WF	WV	12/01/2007	MD-20109-WND-01
AP LAUREL MOUNTAIN 1 WF	WV	05/01/2011	MD-20136-WND-01
AP MISC HYDRO H	WV	06/01/1938	MD-90102-WAT-01
AP PINNACLE 1 WF	WV	11/01/2011	MD-20135-WND-01
AP ROTH ROCK 1 WF	MD	11/01/2010	MD-20122-WND-01
AP SOUTH CHESTNUT 1 WF	PA	11/01/2011	MD-20142-WND-01
AP TWIN RIDGES 1 WF	PA	09/01/2012	MD-20149-WND-01
AP UPTON DG 1 F	PA	11/01/2004	MD-40163-LFG-01
AP WILLOW ISLAND 1 H	WV	11/01/2015	MD-90258-WAT-02
Appomattox River Associates, LP.	VA	09/01/1992	MD-90214-WAT-01
Archbald Power Station	PA	09/01/1988	MD-40115-LFG-01
Atlantic Treatment Plant	VA	05/01/2013	MD-40203-OBG-01
Ball Metal Beverage Container Corp.	OH	08/01/2020	MD-20209-WND-01
Banister Hydro, Inc	VA	01/01/1915	MD-90212-WAT-01
Bavarian LFGTE	KY	09/01/2003	MD-40176-LFG-01
BC ALPHA RIDGE 1 LF	MD	07/01/2012	MD-40171-LFG-01
BC MILLERSVILLE 1 LF	MD	06/01/2012	MD-40168-LFG-01
Beaver Valley Patterson Dam	PA	09/01/1982	MD-90256-WAT-01
Beecher	IL	06/01/2006	MD-40138-LFG-01
Belleville	WV	04/01/1999	MD-90243-WAT-02

Berrien Springs	MI	01/01/1996	MD-90229-WAT-01
Big Shoals Hydro	VA	12/01/1925	MD-90183-WAT-01
Biodyne Pontiac	IL	12/01/1999	MD-40199-LFG-01
Blue Plains Wastewater Treatment Plant Digestors	DC	10/01/2014	MD-20222-WH-01
Blue Ridge LFGTE	PA	11/01/2012	MD-40173-LFG-01
Blue Ridge LFGTE	KY	11/01/2013	MD-40204-LFG-01
Buchanan	MI	01/01/1919	MD-90226-WAT-01
Buckeye BioGas	OH	04/01/2010	MD-50500-OBG-01
Buzzards Roost Hydro	SC	01/01/1940	MD-90260-WAT-01
CCIA BTM	NJ	10/01/2008	MD-40139-LFG-01
CID	IL	03/01/1989	MD-40116-LFG-01
City of Radford Municipal Hydroelectric Project	VA	08/01/1934	MD-90249-WAT-01
City of Rock Falls Upper Sterling Hydro	IL	06/01/1998	MD-90196-WAT-01
Coleman Falls Hydro	VA	06/01/1983	MD-90184-WAT-01
COM ADAM 1 WF	IL	10/01/2007	MD-20160-WND-01
COM ALTA FARMS II 1 WF	IL	04/01/2023	MD-20220-WND-01
COM BIG SKY 1 WF	IL	08/01/2010	MD-20143-WND-01
COM BISHOP HILL 1 WF	IL	02/01/2012	MD-20159-WND-01
COM BISHOP HILL 2 WF	IL	02/01/2012	MD-20159-WND-01
COM BLOOMING GROVE 1 WF1	IL	10/01/2020	MD-20212-WND-01
COM BRIGHT STALK 1 WF	IL	12/01/2019	MD-20202-WND-01
COM CAMP GROVE 1 WF	IL	12/01/2007	MD-20140-WND-01
COM CAMP GROVE 2 WF	IL	12/01/2007	MD-20140-WND-01
COM CAYUGA RIDGE 1 WF	IL	12/01/2009	MD-20117-WND-01
COM ECO GROVE 1 WF	IL	06/01/2009	MD-20127-WND-01
COM GRAND RIDGE 1 WF	IL	10/01/2008	MD-20144-WND-01
COM GRAND RIDGE 2 WF	IL	12/01/2009	MD-20118-WND-01
COM GRAND RIDGE 3 WF	IL	11/01/2009	MD-20119-WND-01
COM GRAND RIDGE 4 WF	IL	12/01/2009	MD-20152-WND-01
COM GREEN RIVER 1 WF	IL	11/01/2019	MD-20200-WND-01
COM GREEN RIVER 2 WF	IL	11/01/2019	MD-20201-WND-01
COM HIGH TRAIL 1 WIND	IL	03/01/2007	MD-20107-WND-01
COM HILLTOPPER 1 WF	IL	11/01/2018	MD-20188-WND-01
COM KELLY CREEK 1 WF	IL	11/01/2016	MD-20176-WND-01
COM LONE TREE 3 WF	IL	11/01/2020	MD-20214-WND-01
COM MINONK 1 WF	IL	10/01/2012	MD-20156-WND-01
COM OLD TRAIL 2 WF	IL	01/01/2008	MD-20108-WND-01
COM OTTER CREEK 1 WF	IL	01/01/2020	MD-20207-WND-01

COM PILOT HILL 1 WF	IL	07/01/2015	MD-20164-WND-01
COM PROVIDENCE HGTS 1 WF	IL	06/01/2008	MD-20155-WND-01
COM RADFORDS RUN 1 WF	IL	10/01/2017	MD-20184-WND-01
COM SHADY OAKS 1 WF	IL	05/01/2012	MD-20218-WND-01
COM SHADY OAKS 2 WF	IL	09/01/2023	MD-20223-WND-01
COM SUBLETTE 1 WF	IL	04/01/2007	MD-20145-WND-01
COM TOP CROP 1 WF	IL	10/01/2009	MD-20125-WND-01
COM TOP CROP 2 WF	IL	07/01/2010	MD-20126-WND-01
COM WALNUT RIDGE 1 WF	IL	10/01/2018	MD-20196-WND-01
COM WBROOK 1 WF	IL	04/01/2007	MD-20145-WND-01
COM WHITNEY HILL 2 WF	IL	12/01/2019	MD-20194-WND-01
Conemaugh Hydro Plant	PA	04/01/1989	MD-90182-WAT-01
Conowingo	MD	03/01/1928	MD-90176-WAT-02
Constantine	MI	01/01/1923	MD-90255-WAT-01
Covanta Fairfax Energy	VA	03/01/1990	MD-80106-MSW-01
Covanta New Martinsville Energy	WV	10/01/1988	MD-90179-WAT-02
Covington Facility	VA	01/01/1989	MD-30010-BLQ-01; MD-30010-WDS-01
Cox Waste-to-Energy Cogeneration Plant	KY	01/01/2001	MD-30114-WDS-01
Crescent Ridge	IL	05/01/2005	MD-20153-WND-01
Croda Atlas Point CHP	DE	08/01/2013	MD-40191-LFG-01
Cushaw	VA	01/01/1930	MD-90231-WAT-01
DC Water Bailey Bioenergy Facility	DC	01/01/2016	MD-20223-WH-01
DC Water Bailey Bioenergy Facility	DC	01/01/2016	MD-20224-WH-01
DC Water Bailey Bioenergy Facility	DC	01/01/2016	MD-20225-WH-01
DC Water Bailey Bioenergy Facility	DC	01/01/2016	MD-20226-WH-01
DC Water Bailey Bioenergy Facility	DC	10/01/2014	MD-40189-OBG-01
DC Water Bailey Bioenergy Facility	DC	10/01/2014	MD-40189-OBG-01
DC Water Bailey Bioenergy Facility	DC	10/01/2014	MD-40189-OBG-01
Deep Creek	MD	07/01/1925	MD-90104-WAT-01
Deep Creek	MD	07/01/1925	MD-90104-WAT-01
DEOK MELDAHL DAM 1 H	KY	08/01/2014	MD-90259-WAT-02
Dixon Hydroelectric Dam	IL	01/01/1988	MD-90195-WAT-01
Domtar Paper Co LLC Plymouth NC	NC	09/01/1952	MD-301180-BLQ-01; MD-30118-WDS-01
DPL CENTRAL 1 LF	DE	12/01/2006	MD-40113-LFG-01
DPL NEWLAND PARK 1 LF	MD	05/01/2007	MD-40167-LFG-01
DPL SOUTHERN 1 LF	DE	10/01/2006	MD-40114-LFG-01
Eastern Correctional Institution	MD	08/01/1987	MD-30117-WDS-01

Eastern LFG BTM	MD	02/01/2021	MD-402010-LFG-01
Eastern LFG BTM	MD	06/01/2020	MD-40209-LFG-01
Easton	MD	11/01/2004	MD-50001-OBL-01
Edge Moor	DE	12/01/1954	MD-40103-LFG-01
Edge Moor	DE	04/01/1966	MD-40104-LFG-01
Edge Moor	DE	08/01/1973	MD-40105-LFG-01
Elkhart	IN	01/01/1913	MD-90230-WAT-01
Falls	NC	12/01/1919	MD-90236-WAT-02
FE ERIE COUNTY 1 LF	OH	04/01/2010	MD-40174-LFG-01
FE GENEVA 1 LF	OH	07/01/2013	MD-40185-LFG-01
FE MAHONING 1 LF	OH	01/01/2013	MD-40186-LFG-01
Findlay Wind Farm	OH	12/01/2015	MD-20175-WND-01
Fowler Ridge II Wind Farm - Vectren	IN	12/01/2009	MD-20138-WND-01
FPL E Somerset Windpower LLC	PA	10/01/2001	MD-20205-WND-01
Franklin Mill	VA	11/01/1977	MD-30106-BLQ-01
French Paper Co	MI	02/01/2000	MD-90221-WAT-01
Frey Farm Landfill	PA	01/01/2006	MD-40141-LFG-01
Gaston	NC	02/01/1963	MD-90231-WAT-02
Great Falls Hydro Project	NJ	09/01/1984	MD-90215-WAT-01
Green Valley LFGTE	KY	09/01/2003	MD-40181-LFG-01
Greene Valley	IL	05/01/1996	MD-40102-LFG-01
Hardin County LFGTE	KY	01/01/2006	MD-40178-LFG-01
Harpster Wind	OH	01/01/2016	MD-20173-WND-01
Haviland Energy	OH	04/01/2012	MD-50503-OBG-01
Haviland Wind Farm	OH	12/01/2012	MD-20161-WND-01
Haviland Wind Farm	OH	12/01/2012	MD-20161-WND-01
Haviland Wind Farm	OH	12/01/2012	MD-20161-WND-01
High Rock	NC	12/01/1927	MD-90237-WAT-02
Holcim-Paulding Wind Project	OH	08/01/2020	MD-20210-WND-01
Holcomb Rock Hydro	VA	06/01/1920	MD-90185-WAT-01
Hopewell Mill	VA	12/01/1980	MD-30101-BLQ-01; MD-30101-WDS-01
HQO	DC	01/01/2019	MD-20221-WH-01
Hydro-FS	VA	10/01/1946	MD-90257-WAT-01
JC OCEAN CTY 1 LF	NJ	05/01/2007	MD-40207-LFG-01
Jersey-Atlantic Wind, LLC	NJ	12/01/2005	MD-20166-WND-01
John H Kerr	VA	12/01/1953	MD-90250-WAT-02
Johnsonburg Mill	PA	02/01/1993	MD-30133-BLQ-01

Kapstone Kraft Paper Corporation	NC	01/01/1999	MD-30116-AB-01; MD-30116-BLQ-01; MD-30116-WDS-01
KC Brighton	MD	07/01/1985	MD-90218-WAT-01
Lake Gas Recovery	IL	08/01/1988	MD-40101-LFG-01
Lake Lynn Power Station	PA	05/01/1926	MD-90101-WAT-02
Lakeview Gas Recovery	PA	06/01/1997	MD-40125-LFG-01
Laurel Ridge LFGTE	KY	09/01/2003	MD-40180-LFG-01
Lockhart Power Hydro	SC	10/01/1921	MD-90261-WAT-01
Lockport Powerhouse Hydroelectric Facility	IL	02/01/1999	MD-90241-WAT-01
London	WV	12/01/1935	MD-90200-WAT-01
Lorain County Power Station	OH	12/01/2001	MD-40188-LFG-01
Lycoming Landfill	PA	08/01/2012	MD-40183-LFG-01
Marmet	WV	12/01/1935	MD-90201-WAT-01
Martin Marietta Wind Project	OH	12/01/2023	MD-20224-WND-01
Martinsville	VA	04/01/2017	MD-45000-OBG-01
ME NORTH LEBANON 1 F	PA	09/01/2007	MD-40142-LFG-01
Mendota Hills LLC	IL	03/01/2019	MD-20100-WND-01
Meyersdale Windpower	PA	12/01/2003	MD-20105-WND-01
Midshore I Regional Solid Waste Facility	MD	06/01/2023	MD-40211-LFG-01
Mill Run Windpower	PA	10/01/2001	MD-20204-WND-01
Montgomery County Resource Recovery	MD	05/01/1995	MD-80001-MSW-01
Montgomery County Resource Recovery Facility	MD	07/01/1995	MD-80001-MSW-01
Moomaws Dam	VA	01/01/1984	MD-90245-WAT-01
Morehead Generating Facility	KY	06/01/2019	MD-40203-LFG-01
Mother Ann Lee Hydroelectric Station	KY	03/01/2007	MD-90219-WAT-01
Mottville	MI	01/01/1923	MD-90227-WAT-01
Narrows	NC	12/01/1917	MD-90238-WAT-02
Niagara	VA	06/01/1954	MD-90202-WAT-01
O'brien Edgeboro	NJ	09/01/1997	MD-40172-LFG-01
Ocean County Landfill	NJ	02/01/1997	MD-40208-LFG-01
PE SE CHESTER COUNTY REFUSE 1 LF	PA	01/01/2007	MD-40135-LFG-01
Pendleton County LFGTE	KY	02/01/2007	MD-40177-LFG-01
Pennsauken Landfill	NJ	01/01/2005	MD-40148-LFG-01
PEP RITCHIE BROWN 2 LF	MD	12/01/2003	MD-40137-LFG-01
PEP RITCHIE BROWN 2 LF	MD	12/01/2003	MD-40137-LFG-01
PEP RITCHIE PG COGEN 1	MD	10/01/1987	MD-40136-LFG-01
PEP RITCHIE PG COGEN 1	MD	10/01/1987	MD-40136-LFG-01
Philpott Lake	VA	08/01/1953	MD-90251-WAT-01

Piney	PA	06/01/1924	MD-90103-WAT-02
Pinnacles Hydro Power Project	VA	06/01/1938	MD-90246-WAT-01
Pixelle Specialty Solutions - Spring Grove	PA	10/01/1989	MD-30109-BLQ-01
Pixelle Specialty Solutions -Chillicothe	OH	07/01/1978	MD-30102-BLQ-01
PL ARCHBALD PEI 5 LF	PA	01/01/2010	MD-40115-LFG-01
PL ARCHBALD PEI 6 LF	PA	01/01/2010	MD-40115-LFG-01
PL LOCUST RIDGE 2 WF	PA	11/01/2008	MD-20115-WND-01
PL PINE GROVE 1 LF	PA	08/01/2008	MD-40165-LFG-01
PN ALLEGHENY RIDGE 1 WF	PA	06/01/2007	MD-20106-WND-01
PN ARMENIA MOUNTAIN 1 WF	PA	11/01/2009	MD-20114-WND-01
PN BIG LEVEL 1 WF	PA	11/01/2019	MD-20195-WND-01
PN CASSELMAN 1 WF	PA	12/01/2007	MD-20123-WND-01
PN HIGHLAND 1 WF	PA	06/01/2009	MD-20211-WND-01
PN HIGHLAND NORTH 2 WF	PA	02/01/2012	MD-20146-WND-01
PN LAUREL HILLS 1 WF	PA	09/01/2012	MD-20154-WND-01
PN LOOKOUT 1 WF	PA	10/01/2008	MD-20151-WND-01
PN MEHOOPANY 1 WF	PA	12/01/2012	MD-20148-WND-01
PN MEHOOPANY 2 WF	PA	12/01/2012	MD-20148-WND-01
PN NORTH ALLEGHENY 2 WF	PA	09/01/2009	MD-20190-WND-01
PN NORTHERN TIER 1 D	PA	01/01/2009	MD-40144-LFG-01
PN PATTON 1 WF	PA	11/01/2012	MD-20150-WND-01
PN RINGER HILL 1 WF	PA	12/01/2016	MD-20180-WND-01
PN SANDY RIDGE 1 WF	PA	03/01/2012	MD-20157-WND-01
PN SANDY RIDGE 2 WF	PA	08/01/2023	MD-20222-WND-01
PN SHIPPENSBURG 1 LF	PA	01/01/2009	MD-40143-LFG-01
PN STONY CREEK 1 WF	PA	11/01/2009	MD-20120-WND-01
Pocomoke Drying Plant	MD	03/01/2007	MD-50508-OBS-01
PS PENNSAUKEN 1 LF	NJ	12/01/2004	MD-40148-LFG-01
Racine	OH	01/01/1983	MD-90217-WAT-02
Ravenna Hydroelectric Project	KY	04/01/2021	MD-90252-WAT-01
Reusens	VA	01/01/1903	MD-90244-WAT-01
Roanoke Rapids	NC	09/01/1955	MD-90232-WAT-02
Rochelle Energy LLC	IL	12/01/2011	MD-40175-LFG-01
Safe Harbor	PA	10/01/1940	MD-90100-WAT-02
Safe Harbor	PA	11/01/1934	MD-90100-WAT-02
Safe Harbor	PA	12/01/1931	MD-90100-WAT-02
Safe Harbor	PA	12/01/1931	MD-90100-WAT-02
Safe Harbor	PA	01/01/1932	MD-90100-WAT-02
Safe Harbor	PA	01/01/1932	MD-90100-WAT-02

Safe Harbor	PA	10/01/1933	MD-90100-WAT-02
Safe Harbor	PA	04/01/1985	MD-90100-WAT-02
Safe Harbor	PA	02/01/1986	MD-90100-WAT-02
Safe Harbor	PA	06/01/1985	MD-90100-WAT-02
Safe Harbor	PA	04/01/1986	MD-90100-WAT-02
Safe Harbor	PA	09/01/1985	MD-90100-WAT-02
Salisbury Drying Plant	MD	09/01/2020	MD-50507-OBS-01
Schoolfield Dam	VA	12/01/1990	MD-90193-WAT-01
Settlers Hill	IL	10/01/1988	MD-40119-LFG-01
Snowden Hydro Site	VA	08/01/1987	MD-90186-WAT-01
Storm Lake Power Partners II LLC	IA	04/01/1999	MD-20225-WND-01
Suburban Landfill Generator	OH	01/01/2011	MD-40212-LFG-01
Swift Creek Hydro, Inc.	VA	10/01/1988	MD-90211-WAT-01
Talbot County Bio-Mass Facility	MD	04/01/2011	MD-20130-WND-01
Tatanka Wind Farm	ND	01/01/2008	MD-20169-WND-01
Tuckertown	NC	12/01/1962	MD-90239-WAT-02
Tullytown Landfill Gas-to-Energy Facility	PA	03/01/2013	MD-40184-LFG-01
Twin Branch	IN	05/01/1989	MD-90228-WAT-01
Twin Cities Hydro LLC	MN	10/01/1924	MD-90253-WAT-01
Valfilm Wind Project	OH	09/01/2018	MD-20191-WND-01
VP AMELIA 1 CT	VA	08/01/2001	MD-40157-LFG-01
VP BETHEL 1 LF	VA	10/01/2007	MD-40132-LFG-01
VP BRUNSWICK 1 LF	VA	10/01/2007	MD-40158-LFG-01
VP CHARLES CITY 1 CT	VA	11/01/2003	MD-40159-LFG-01
VP CHESTERFIELD 1 LF	VA	06/01/2004	MD-40160-LFG-01
VP DESERT 1 WF	NC	11/01/2016	MD-20178-WND-01
VP EMPORIA 1 H	VA	01/01/1986	MD-90213-WAT-01
VP HENRICO 1 LF	VA	09/01/2010	MD-40161-LFG-01
VP KING AND QUEEN 1 D	VA	01/01/2008	MD-40162-LFG-01
VP KING GEORGE 1 LF	VA	05/01/2010	MD-40149-LFG-01
VP NEW CREEK 1 WF	WV	11/01/2016	MD-20179-WND-01
VP NORTHEAST 2 LF	VA	12/01/2011	MD-40154-LFG-01
VP OCCOQUAN 2 LF	VA	03/01/1993	MD-40107-LFG-01
VP PENINSULA 3 LF	VA	09/01/2009	MD-40146-LFG-01
VP SOUTH BOSTON 1 F	VA	09/01/2013	MD-30113-WDS-01
VP VIRGINIA BEACH 1 LF	VA	11/01/2001	MD-40166-LFG-01
Waymart Wind	PA	10/01/2003	MD-20206-WND-01
West Point Mill	VA	10/01/1985	MD-30112-BLQ-01; MD-30112-WDS-01

Wheelabrator Baltimore Refuse	MD	05/01/1985	MD-80101-MSW-01
Whirlpool Corporation - Greenville Wind Farm	OH	10/01/2018	MD-20192-WND-01
Whirlpool Corporation - Ottawa Wind Farm	OH	01/01/2018	MD-20187-WND-01
Whirlpool Corporation-Marion Wind Farm	OH	10/01/2017	MD-20185-WND-01
Winfield	WV	01/01/1938	MD-90203-WAT-01
Woodland	IL	05/01/1992	MD-40121-LFG-01
XIC FARMER CITY 1 WF	MO	02/01/2009	MD-20171-WND-01
York Haven	PA	12/01/1905	MD-90240-WAT-01
Yough Hydro Power	PA	12/01/1989	MD-90242-WAT-01
Zanesville Energy	OH	10/01/2010	MD-50502-OBG-01
Zephyr Wind	OH	12/01/2015	MD-20174-WND-01

Appendix G Price of RECs by Fuel Source

Fuel Source	Price/REC
Black Liquor	$26.53
Geothermal	$15.83
Post-2022 Geothermal	$94.47
Landfill Gas	$17.26
Municipal Solid Waste	$24.49
Other Biomass Gas	$20.00
Other Biomass Solids	$26.21
Solar Hot Water	$57.64
PV Solar	$56.66
Tier 1 Hydroelectric	$24.49
Wood and Waste Solids	$23.03
Waste Heat	$22.81
Wind	$25.34
Tier 2 Hydroelectric	$10.50

Attachment B:

2024 Public Service Commission EmPOWER Maryland Energy Efficiency Act Report

PUBLIC SERVICE COMMISSION OF MARYLAND

The EmPOWER Maryland Energy Efficiency Act REPORT OF 2024

With Data for Compliance Year 2023

In compliance with Section 7-211 of
the Public Utilities Article,
Annotated Code of Maryland

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May 2024

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Report Contents

This document constitutes the 2024 annual report of the Public Service Commission of Maryland regarding the EmPOWER Maryland Energy Efficiency Act. This Report is submitted in compliance with §7-211 of the Public Utilities Article (PUA), *Annotated Code of Maryland*. PUA §7-211 requires that, on or before May 1 of each year, the Commission, in consultation with the Maryland Energy Administration (MEA), shall report to the General Assembly on the following:

1. the status of programs and services to encourage and promote the efficient use and conservation of energy, including an evaluation of the impacts of the programs and services that are directed to low-income communities, low-to moderate-income communities to the extent possible, and other particular classes of ratepayers;
2. a recommendation for the appropriate funding level to adequately fund these programs and services; and
3. in accordance with subsection (c) of this section, the per capita electricity consumption and the peak demand for the previous calendar year.

In compliance with PUA §7-211, topics addressed in this report include a summary of: the Energy Efficiency & Conservation (EE&C) and Demand Response (DR) program achievements and information regarding forthcoming milestones.

Executive Summary

The Commission reviews the progress of EmPOWER programs on a semi-annual basis, typically in May, to review the results of the third and fourth quarters of the previous year, and again in October to review the results of the first and second quarters of the current year. As part of these semi-annual hearings, parties may also request program modifications and budget adjustments. As needed, the Commission also holds *ad hoc* proceedings to address specific EmPOWER elements.

The Commission held a legislative-style hearing on May 2, 2023 to review the semi-annual EmPOWER reports filed by the EmPOWER Maryland Utilities[1], Washington Gas (WGL) and the Maryland Department of Housing and Community Development (DHCD), with data from the third and fourth quarters of 2022. Following these hearings, on June 9, 2023, the Commission issued Order No. 90663 which addressed program design and evaluation issues as well as future programming. Specifically, the Commission directed the Midstream Work Group to file a status report by October 13, 2023 and an interim status report by August 15, 2023, focusing on the possibility of a single-implementer model and further program enhancements. Further, the Commission directed the EmPOWER Reporting and Process Improvement (ERPI) Work Group to file a status report by October 15, 2023, and another status report by January 19, 2024.

[1] The "EmPOWER Maryland Utilities" (electric) are: The Potomac Edison Company (PE); Baltimore Gas and Electric Company (BGE); Delmarva Power & Light Company (DPL); Potomac Electric Power Company (Pepco);

The Commission held its second legislative-style hearing on November 6, 2023, to consider the semi-annual EmPOWER reports filed by the Utilities—WGL and DHCD—for the first and second quarters of 2023. On November 28, 2023, the Commission issued Order No. 90919 which provided direction on programmatic improvements and modifications. Specifically, the Commission approved a two-year extension to the Clean Energy Advantage (CEA) Pilot Program and directed the Finance Work Group to file a final report on the pilot by February 16, 2026. The Order also directed the Finance Work Group to file a final report by April 15, 2024, on the remaining budget of the CEA Pilot Program.

The Commission also reviewed the utilities' and DHCD's proposals for 2024–2026 EmPOWER programs. The Commission issued Order No. 90957 transitioning the EmPOWER program to the new cycle on December 29, 2023.

Initiative Highlights

- Program-to-date, the Utilities' EmPOWER Maryland programs have saved a total of 16,237,812 MWh and 3,165 MW. The expected savings associated with EmPOWER Maryland programs is over $14.5 billion over the life of the installed measures for the EE&C programs.

- Across all Utilities, the lifecycle cost per kWh for the EE&C programs, in 2023, is $0.041 per kWh[2]—significantly lower than the current cost of Standard Offer Service (SOS),—which ranges from $0.079 to $0.119 per kWh.

- Program-to-date, the Utilities have spent over $4.1 billion on the EmPOWER Maryland programs, including approximately $2.9 billion on EE&C programs, and $1.1 billion on DR programs.

- EmPOWER EE&C programs continue to be cost effective on a statewide basis in 2022, with a statewide societal cost test (SCT) score of 2.12 verified for program year 2022. For every dollar of reported utility or participant cost, the EmPOWER EE&C programs generate approximately $2.12 in benefits.

- Program-to-date, 73,285 limited-income customers participated in EmPOWER Maryland through the Residential Limited-Income Programs. Of the program-to-date participants, 13,513 limited-income households participated in 2023. The average savings per participant in 2023 was 478 kWh. Program-to-date spending on limited-income energy efficiency programs is approximately $264.4 million.

- The average monthly residential surcharge bill impacts[3] for 2023 were as follows:

[2] The lifecycle cost per kWh is calculated by dividing the total EE&C expenditures by the total lifecycle energy savings of the Utilities.

[3] Bill impacts are calculated assuming an average residential monthly usage of 1,000 kilowatt-hours (kWh). The calculated bill impact does not reflect savings produced by EmPOWER Maryland programs through reduced customer usage or energy rate reductions due to reduced system demand.

Table 1: Average Monthly Residential Bill Impacts from EmPOWER Maryland Surcharge in 2023

	EE&C	DR	Dynamic Pricing[4]	Total
BGE	$4.40	$2.75	($0.01)	$7.14
DPL	$5.81	$1.58	($0.11)	$7.28
PE	$6.41	N/A	N/A	$6.41
Pepco	$5.93	$2.64	($0.06)	$8.51
SMECO	**$7.58**	**$2.15**	**N/A**	$9.73

- The reported energy savings for 2023 and program-to-date are as follows:

Table 2 EE&C Reported Achievements[5,6]

	2023 Reported Energy Savings (MWh)[7]	2023 Energy Savings as a % of 2016 Retail Sales Baseline	2023 Target Energy Savings %	Program-to-Date Reduction (MWh)[8]
BGE	745,466	2.33%	2.00%	8,694,123
DPL	93,257	2.22%	2.00%	1,036,763
PE	167,652	2.26%	2.00%	1,574,140
Pepco	376,163	2.59%	2.00%	4,284,536
SMECO	75,042	2.21%	1.93%	749,998

EmPOWER Maryland Portfolios

For the 2021-2023 program cycle, the Commission directed the Utilities to meet the EmPOWER Maryland goals through a diverse array of cost-effective solutions for Maryland ratepayers, which can include EE&C, DR, and Advanced Metering Infrastructure (AMI) or Smart Grid-enabled opportunities.[9] While the EmPOWER Maryland Act mandates that the Commission require each gas and electric utility to establish energy efficiency programs, the

[4] The difference between rebates paid to participants and revenues received from PJM markets are trued-up in the subsequent calendar year review of the EmPOWER Maryland surcharge. Therefore, the 2021 dynamic pricing bill impacts include trued-up costs associated with the Peak Time Rebate program offered by BGE, DPL, and Pepco in the summer of 2020. The dynamic pricing surcharge for BGE was negative in 2021 (*i.e.*, resulted in a credit) because the PJM capacity payments received by the utility exceeded the rebate credits paid to customers.

[5] "Reported" savings constitute unverified energy savings and demand reductions based on the Utilities' quarterly programmatic reports. An independent, third-party verification of reported savings is conducted annually.

[6] EmPOWER Maryland 2018 Annual Target was defined in the *2018-2020 Program Cycle EmPOWER Maryland Annual Electric Energy Efficiency Targets* in Order No. 87402 (Sept. 26, 2017) at 11.

[7] Based on preliminary energy savings from semi-annual programmatic reports. These savings will be verified through an EM&V process.

[8] Program-to-date reported reductions include savings contributions from Fast Track Programs, which were Lighting and Appliance Rebate programs that began before the EmPOWER Maryland Law was enacted.

[9] Beginning in 2015, the Commission also directed WGL to implement natural gas energy efficiency and conservation programs. *See* Case No. 9362, *In the Matter of Washington Gas Light Company's Energy Efficiency, Conservation and Demand Response Programs Pursuant to the EmPOWER Maryland Energy Efficiency Act of 2008.*

directive is limited to those programs that the Commission deems appropriate after considering: (a) cost effectiveness, (b) the impact on rates of each ratepayer class in determining whether to approve an energy efficiency program, (c) the impact on jobs, and (d) on the environment.[10]

In order to verify the Utilities' energy and peak demand savings resulting from individual EE&C and DR programs, the Commission has developed an independent, third-party evaluation, measurement and verification (EM&V) process for the EmPOWER programs, consistent with national best practices. See the "Evaluation, Measurement & Verification" section herein for further information. Beginning with the 2016 program year, the Utilities were evaluated against the post-2015 electric energy efficiency goals established by Order No. 87082,[11] which are designed to achieve an annual incremental gross energy savings equivalent to 2.0 percent of the individual utility's weather normalized gross retail sales baseline, with a ramp-up rate of 0.20 percent per year.

Energy Efficiency & Conservation Programs

In Order No. 89679, issued on December 18, 2020, the Commission approved plans for the 2021-2023 program cycle. The Utilities' EmPOWER Maryland core EE&C program offerings are similarly designed with standardized customer incentives across the State, albeit with some variation in program implementation based on service territory demographics. Residential EE&C programs include discounted light-emitting diodes (LEDs) and appliances; heating, ventilation, and air conditioning (HVAC) rebates; home energy audits; weatherization; and limited-income programs.[12] Commercial and industrial EE&C programs are designed to encourage businesses to upgrade to more efficient equipment, such as lighting or HVAC retrofits, or to improve overall building performance through weatherization or building shell upgrades. For larger commercial buildings or industrial facilities, a utility can customize its program offerings for cost-effective improvements.

[10] PUA §7-211(i)(1). In its evaluation of a program or service, the Commission must consider the following four factors: cost effectiveness; impact on rates of each ratepayer class; impact on jobs; and impact on the environment.

[11] The electric energy efficiency goals are codified in statute for the duration of the 2018-2020 and 2021-2023 program cycles as a result of legislation enacted during the 2017 legislative session. *See* Md. Laws Ch. 014 (2017); PUA §7-211(g).

[12] Other than the volumetric surcharge collected from all ratepayers, limited-income programs are offered at no additional cost for those who qualify.

Baltimore Gas and Electric Company (BGE)

BGE EmPOWER Programs	
Residential Program	**Commercial Programs**
Appliance Rebates	Combined Heat and Power
Appliance Recycling	Commercial Behavior Based
Home Performance with Energy Star	Custom
HVAC	Midstream Products
Lighting	Prescriptive
Quick Home Energy Checkup	Retrocommissioning
Residential Behavior Based	Small Business
Residential New Construction	
Smart Thermostats	
Schools	

BGE realized 97 percent of its 2023 annual energy savings target (or 745,466 MWh) and 104 percent of its forecasted 2023 annual demand reduction target (or 540 MW). BGE's programs reached nearly 2.3 million participants and installed over 6.4 million measures in homes and businesses in the BGE service territory for just over $157.4 million.

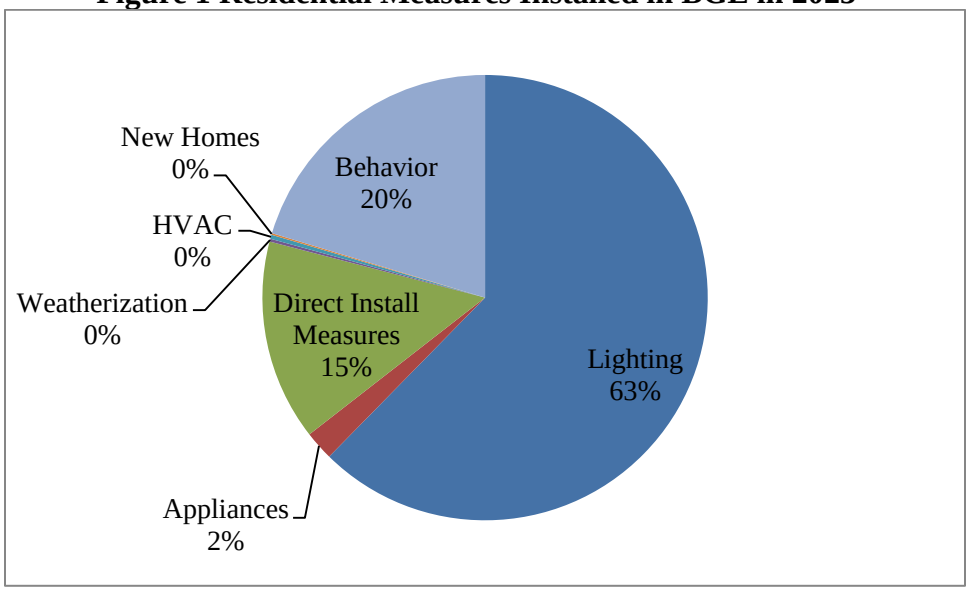
Table 3 BGE Reported Savings vs Targets for 2023

	2023 Reported Savings	2023 Target Savings[13,14]	% of Target Achieved
MWh	745,466	766,151	97%
MW	540	518	104%

[13] EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each Utility.

[14] The demand reduction targets and reported achievements include peak demand reductions generated by both EE&C and DR programs, as both components are part of the total portfolio.

Figure 1 Residential Measures Installed in BGE in 2023[15]



Potomac Electric Power Company (Pepco)

Pepco EmPOWER Programs	
Residential Program	**Commercial Programs**
Appliance Rebates	Combined Heat and Power
Appliance Recycling	Custom
Behavior Based	Customer Engagement Portal
Home Performance with Energy Star	Energy Efficient Communities
HVAC	Midstream Products
Lighting	Prescriptive
Quick Home Energy Checkup	Retrocommissioning
Residential New Construction	Small Business
Schools	Virtual Commissioning
Smart Thermostats	

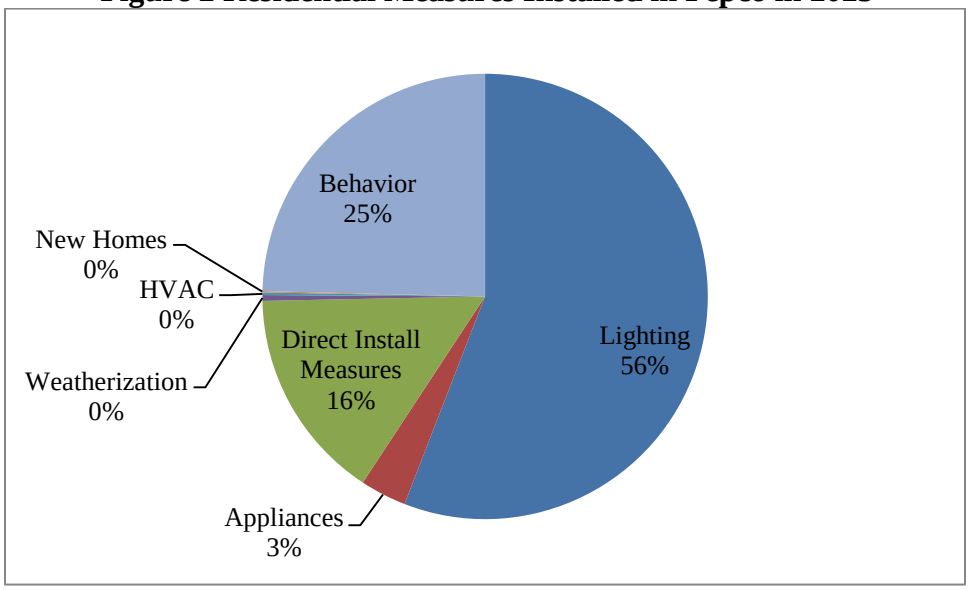
Pepco realized 89 percent of its 2023 annual energy savings target (or 376,163 MWh) and 79 percent of its forecasted 2023 annual demand reduction target (or 318 MW). Pepco's programs reached over 477,000 participants and installed over 2.6 million measures in homes and businesses in the Pepco service territory for approximately $89.1 million.

[15] Direct Install Measures are energy efficiency measures installed directly into a customer's home typically through a home audit program. These measures include things such as lightbulbs and faucet aerators.

Table 4 Pepco Reported Savings vs Targets for 2023

	2023 Reported Savings	2023 Target Savings[16,17]	% of Target Achieved
MWh	376,163	421,246	89%
MW	318	402	79%

Figure 2 Residential Measures Installed in Pepco in 2023



The Potomac Edison Company (PE)

PE EmPOWER Programs	
Residential Program	**Commercial Programs**
Appliance Rebates	Custom
Appliance Recycling	Prescriptive
Behavior Based	Retrocommissioning
Energy Efficiency Kits	Small Business
Home Performance with Energy Star	
HVAC	
Lighting	
Quick Home Energy Checkup	
Residential New Construction	
Schools	

PE realized 102 percent of its 2023 annual energy savings target (or 167,652 MWh) and 108 percent of its forecasted 2023 annual demand reduction target (or 28 MW). PE's programs

[16] EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each Utility.

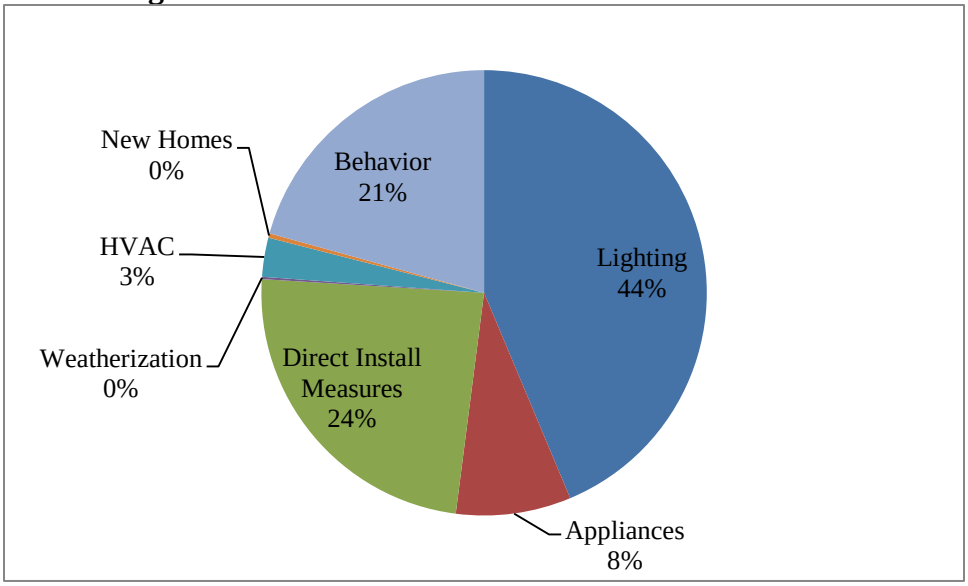
[17] The demand reduction targets and reported achievements include peak demand reductions generated by both EE&C and DR programs, as both components are part of the total portfolio.

reached over 258,828 participants and installed over 750,000 million measures in homes and businesses in the PE service territory for approximately $48.0 million.

Table 5 PE Reported Savings vs Targets for 2023

	2023 Reported Savings	2023 Target Savings[18]	% of Target Achieved
MWh	167,652	164,543	102%
MW	28	26	108%

Figure 3 Residential Measures Installed in PE in 2023



Delmarva Power & Light Company (DPL)

DPL EmPOWER Programs	
Residential Program	**Commercial Programs**
Appliance Rebates	Combined Heat and Power
Appliance Recycling	Custom
Behavior Based	Customer Engagement Portal
Home Performance with Energy Star	Energy Efficient Communities
HVAC	Midstream Products
Lighting	Prescriptive
Quick Home Energy Checkup	Retrocommissioning
Residential New Construction	Small Business
Schools	Virtual Commissioning
Smart Thermostats	

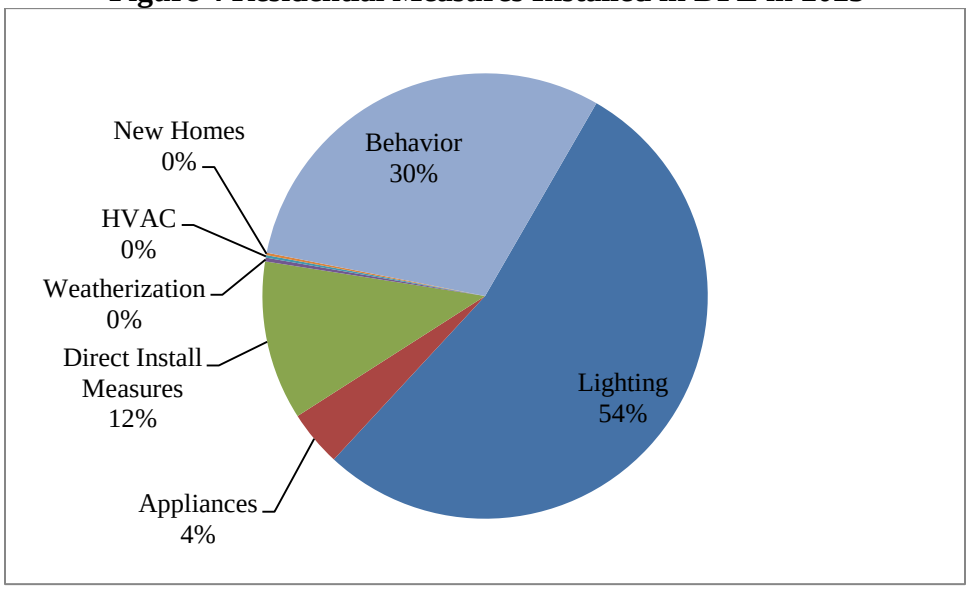
[18] EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each Utility.

DPL realized 95 percent of its 2023 annual energy savings target (or 93,257 MWh) and 106 percent of its forecasted 2023 annual demand reduction target (or 67 MW). DPL's programs reached over 138,000 participants and installed over 622,000 million measures in homes and businesses in the DPL service territory for approximately $29.5 million.

Table 6 DPL Reported Savings vs Targets for 2023

	2023 Reported Savings	2023 Target Savings[19,20]	% of Target Achieved
MWh	93,257	98,191	95%
MW	67	63	106%

Figure 4 Residential Measures Installed in DPL in 2023



[19] EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each Utility.

[20] The demand reduction targets and reported achievements include peak demand reductions generated by both EE&C and DR programs, as both components are part of the total portfolio.

Southern Maryland Electric Cooperative, Inc. (SMECO)

SMECO EmPOWER Programs	
Residential Program	**Commercial Programs**
Appliance Rebates	Combined Heat and Power
Appliance Recycling	Custom
Behavior Based	Midstream Products
Energy Efficiency Kits	Prescriptive
Home Energy Improvement	Retrocommissioning
HVAC	Small Business
Lighting	
My Energy Target	
Residential New Construction	
Schools	
Smart Thermostats	
SmartTemps	

SMECO realized 93 percent of its 2023 annual energy savings target (or 75,042 MWh) and 97 percent of its forecasted 2023 annual demand reduction target (or 74 MW). SMECO's programs reached over 362,000 participants and installed almost 1.0 million measures in homes and businesses in the SMECO service territory for approximately $27.3 million.

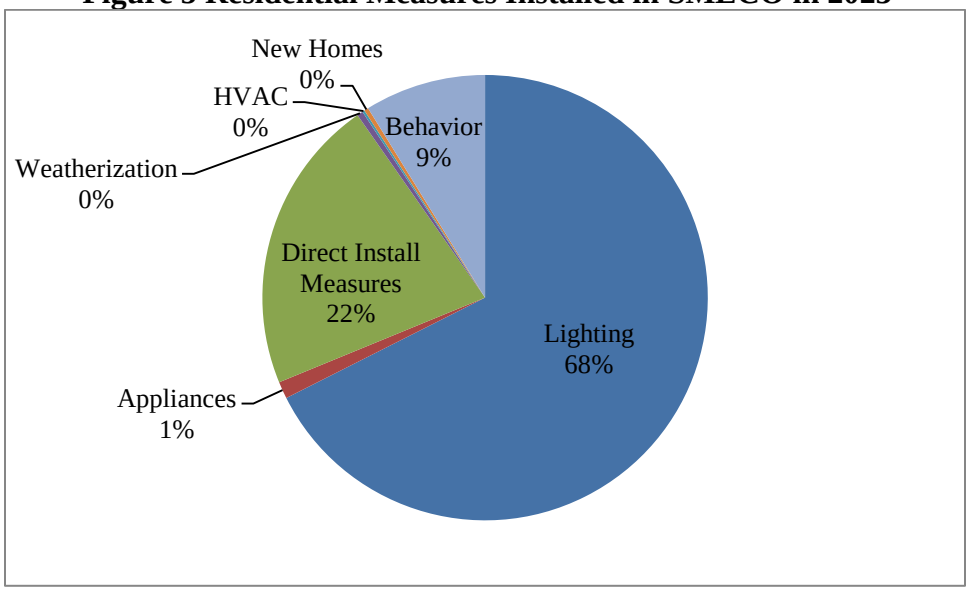
Table 7 SMECO Reported Savings vs Targets for 2023

	2023 Reported Savings	2023 Target Savings[21,22]	% of Target Achieved
MWh	75,042	81,044	93%
MW	74	77	97%

[21] EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each Utility.

[22] The demand reduction targets and reported achievements include peak demand reductions generated by both EE&C and DR programs, as both components are part of the total portfolio.

Figure 5 Residential Measures Installed in SMECO in 2023



Washington Gas Light Company (WGL)

WGL EmPOWER Programs	
Residential Program	**Commercial Programs**
Residential Existing Home	C&I Prescriptive
Residential New Construction	Custom
Behavior Based	
Residential Coordinated	

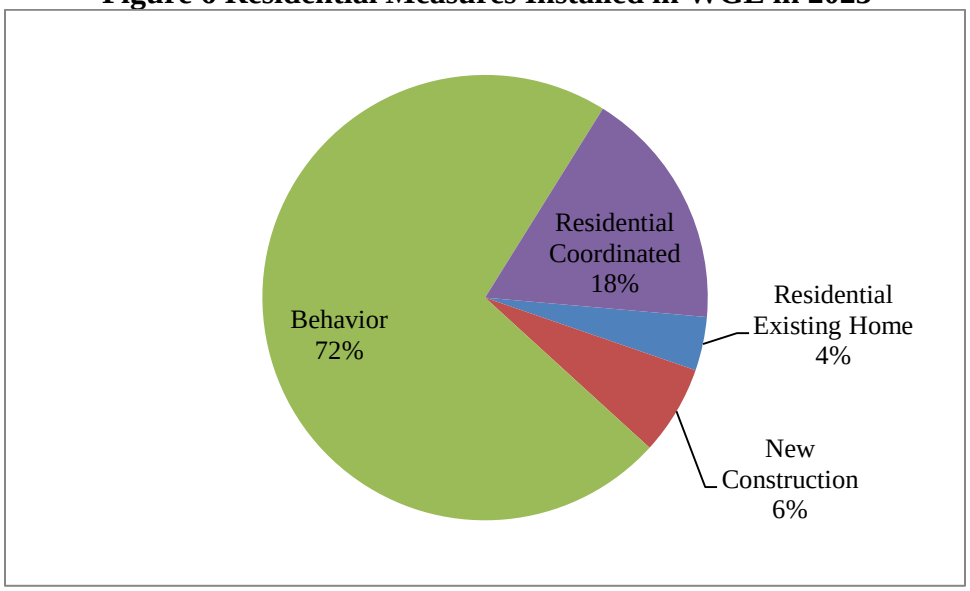
WGL realized 99 percent of its 2023 annual energy savings target (or 2,424,699 Therms). WGL's programs reached over 129,000 participants and installed over 155,000 measures in homes and businesses in the WGL service territory for approximately $12.5 million.

Table 8 WGL Reported Savings vs Targets for 2023

	2023 Reported Savings	2023 Target Savings[23]	% of Target Achieved
Therms	2,424,699	2,445,402	99%

[23] EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of each Utility.

Figure 6 Residential Measures Installed in WGL in 2023



Limited-Income Programs

On December 22, 2011, the Commission, in Order No. 84569, designated DHCD as the sole implementer of limited-income programs for the EmPOWER Maryland Utilities. In April 2012, DHCD accepted control of the residential limited-income programs of BGE, PE, and SMECO. In July 2012, the transition was completed with DHCD accepting control of the Pepco and DPL limited-income programs.

In Order No. 86785, issued on December 23, 2014, the Commission authorized DHCD to continue its implementation of the limited-income programs in Maryland during calendar year 2015, subject to certain specified structural enhancements such as spending guidelines per household. DHCD was approved as the implementer of the limited-income programs for the remainder of the 2015-2017 program cycle in Order No. 86995. In Order No. 89679, DHCD's 2021-2023 program cycle plan was approved.[24]

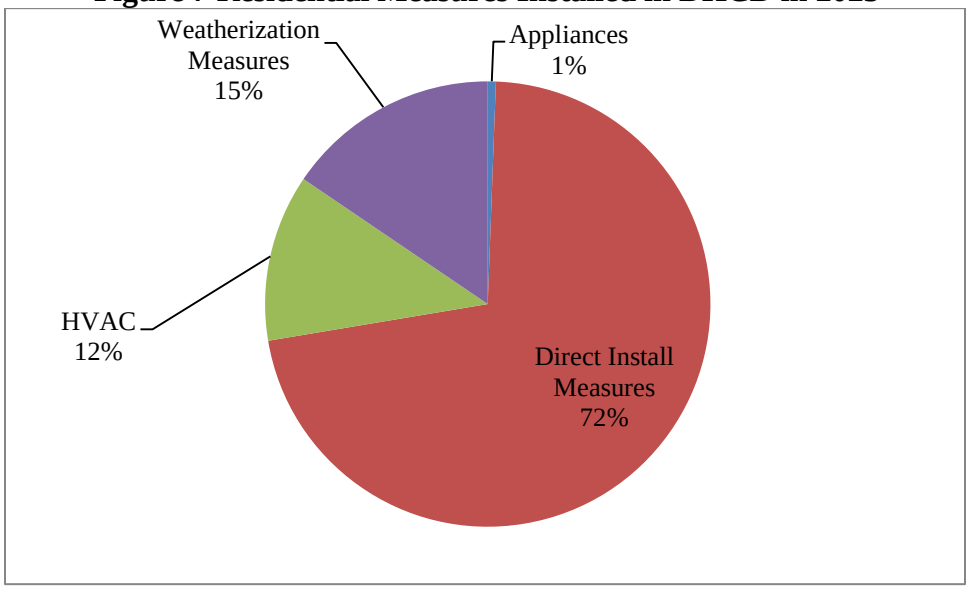
DHCD offers two programs, one for single family homes and another for multifamily properties. In 2023, DHCD weatherized approximately 14,000 limited-income homes and 2,500 multifamily properties at a total cost of $24.2 million. The average savings per participant in 2023 was 478 kWh.

[24] DHCD also partners with WGL to implement limited-income programs in WGL's service territory.

Table 9 DHCD Reported Savings vs Targets for 2023

Program	Energy/Demand Savings	2023 Reported Savings	2023 Target Savings[25]	% of Target Achieved
Single Family	MWh	4,598	8,075	57%
	MW	1.287	2.249	57%
Multifamily	MWh	2,980	6,402	47%
	MW	0.887	1.766	50%

Figure 7 Residential Measures Installed in DHCD in 2023



Demand Response

The EmPOWER Maryland Act requires the Utilities to implement cost-effective demand response programs; although, there are not currently goals established for the magnitude of demand reduction that each Utility must target (following the realization of the legislatively-mandated 15 percent by 2015 targets). The Commission approved four residential demand response programs in late 2007 and early 2008,[26] all of which were operational by the end of 2009.[27]

Customers who have chosen to participate in the direct load control programs included in the Utilities' demand response portfolios have a switch or thermostat installed at their properties to briefly curtail usage of central air conditioning or an electric heat pump in instances of system reliability issues or high electricity prices during critical peak hours. Each direct load control DR program includes the following common components: (1) customer participation in DR programs is voluntary; (2) upon receiving a customer request, the utility installs either a

[25] EmPOWER Maryland reduction targets are based upon the individual EmPOWER Maryland filings of DHCD.
[26] *See* Commission Letter Order (Nov. 30, 2007).
[27] The Commission did not approve a DR program for PE similar to those implemented for BGE, Pepco, DPL, and SMECO because PE's proposed program was not cost effective due to lower zonal capacity prices.

programmable thermostat or a direct load control switch for a central air conditioning system or for an electric heat pump on a customer's premise; (3) the Utilities provide a one-time installation incentive and annual bill credits to the participants during the specified summer peak months; and (4) with the exception of the SMECO DR program, customers can select one of three cycling choices (50 percent, 75 percent, or 100 percent).[28] Utilities will invoke the cycling process when PJM calls for an emergency event or if the Utilities individually determine that an event is necessary during summer peak season. Table 10 summarizes the incentives offered by the Utilities to the residential program participants.

Table 10 Utilities' Incentive Levels for Residential Demand Response Program Participants

Utility	50% Cycling		75% Cycling		100% Cycling		Bill Credit Months
	Installation Incentive	Annual Bill Credit	Installation Incentive	Annual Bill Credit	Installation Incentive	Annual Bill Credit	
BGE	$50	$50	$75	$75	$100	$100	Jun.–Sept.
Pepco	$40	$40	$60	$60	$80	$80	Jun.– Oct.
DPL	$40	$40	$60	$60	$80	$80	Jun.– Oct.
SMECO	***	$50	***	$75	N/A	N/A	Jun.– Oct.

*** A participant in SMECO's CoolSentry program can keep the installed thermostat at no additional cost following 12 months of program participation; otherwise, the thermostat will be removed if the participant terminates participation less than 12 months after installation.

Table 11 summarizes the number of active devices installed for each of the Utilities' direct load control (DLC) programs on a program-to-date basis through December 31, 2023.

Table 11 Utilities' Residential Direct Load Control Program Device Installation

Utility	Residential	Commercial	Total
BGE	377,299	N/A	377,299
DPL	40,075	2,733	42,808
Pepco	231,700	6,445	238,145
SMECO	39,557	91	39,648
Total	688,631	9,269	697,900

Table 12 summarizes the demand reduction capability for the Utilities' DLC programs as of December 31, 2023.

[28] The three cycling choices represent the air conditioner compressor working cycle reduced by 50 percent, 75 percent, or 100 percent under PJM- or utility-invoked emergency events during summer peak season. SMECO only offers 50 percent and 75 percent cycling levels with corresponding bill credits of $50 and $75 during the summer months.

Table 12 DLC Program Coincident Peak Demand Reduction (MW)

Utility	Program-to-Date Reported
BGE	247.239
DPL	39.301
Pepco	238.240
SMECO	52.729
Total	**577.509**

Additional demand reductions are expected to stem from smart grid-enabled dynamic pricing programs, as well as from other non-EmPOWER funded programs such as conservation voltage reduction (CVR). Table 13 summarizes the reported demand reductions from the dynamic pricing programs for 2013-2022. BGE, Pepco, and DPL are currently the only Utilities that operate dynamic pricing programs. Demand reductions from dynamic pricing programs represent a snapshot for a particular time period and are dependent upon customer engagement and participation; therefore, demand reductions attributable to dynamic pricing programs could change year-to-year.

Table 13 Dynamic Pricing Demand Reduction (MW)

Utility	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BGE	0	209	309	336	330	140	111	110	125	125	125
DPL	0	0	143	39	31	47	0	54	64	31	0
Pepco	309	125	47	126	135	124	91	55	140	140	0
Total	**309**	**334**	**499**	**501**	**496**	**311**	**202**	**219**	**329**	**296**	**125**

PJM Reliability Pricing Model Capacity Market

Some EmPOWER Maryland programs are eligible to participate in the wholesale energy market through PJM's capacity auctions and can receive payments that are used to offset the costs in the EmPOWER programs and lower the surcharge.

PJM conducted the Base Residual Auction (BRA) for delivery years (DY) 2022/2023 in June of 2022. The auction had been postponed in 2019 after the Federal Energy Regulatory Commission's (FERC) orders stating the PJM auction was non-competitive and adding a Minimum Offer Price Rule (MOPR) applicable to any capacity resource that was deemed to receive a state subsidy. After receiving FERC orders on October 15 and November 12, 2021, approving PJM's proposal for fixing the capacity market rules by imposing a MOPR, PJM released a schedule for the capacity auctions. The BRA for DY 2024/2025 was held in December of 2023 and the BRA for DY 2025/2026 will be held in June 2024.

The following tables illustrate the cleared capacity and PJM capacity payments for the DLC, EE&C and DP programs. The utilities previously bid DLC as a capacity program and received capacity payments from PJM for these programs. For DY 2021/2022 and onwards these programs were shifted to a Price Responsive Demand resource in PJM which reduces the capacity obligations of the utility and thus reduces the capacity payments customers would otherwise have had to make.

Table 14 Demand Response Program BRA Results

	Cleared Capacity (MW)	PJM Capacity Payment (Million $)
DY 2009/2010	217	$18.8
DY 2010/2011	415	$26.4
DY 2011/2012	662	$26.6
DY 2012/2013	953	$46.5
DY 2013/2014	803	$67.7
DY 2014/2015	772	$33.9
DY 2015/2016	625	$36.0
DY 2016/2017	554	$24.1
DY 2017/2018	536	$23.5
DY 2018/2019	522	$11.5
DY 2019/2020	230	$1.6
DY 2020/2021	265	$9.2
DY 2021/2022[29]	N/A	N/A
DY 2022/2023[30]	N/A	N/A
DY 2023/2024[31]	N/A	N/A
Total	**6,554**	**$325.8**

The Utilities also bid capacity reductions from their EE&C programs and AMI-enabled dynamic pricing programs. Utilities earn capacity payments from PJM for these commitments; the payments are used to offset EE&C program costs and to fund the rebates earned by customers in the dynamic pricing program. Table 15 and Table 16 summarize the capacity bid into the PJM capacity market from the EE&C and dynamic pricing programs by delivery year, and the payments the Utilities receive from PJM.

[29] The DLC program committed 589 MW of capacity as a Price Responsive Demand resource. Under the prior RPM construct, 589 MW would have earned approximately $32.8 million in capacity payments from PJM.
[30] The DLC program committed 233 MW of capacity as a Price Responsive Demand resource. Under the prior RPM construct, 233 MW would have earned approximately $9.8 million in capacity payments from PJM.
[31] The DLC program committed 235 MW of capacity as a Price Responsive Demand resource. Under the prior RPM construct, 235 MW would have earned approximately $5.2 million in capacity payments from PJM.

Table 15 EE&C Program BRA Results

	Cleared Capacity (MW)	PJM Capacity Payment (Million $)
DY 2012/2013	168	$8.2
DY 2013/2014	107	$8.7
DY 2014/2015	179	$8.3
DY 2015/2016	175	$10.2
DY 2016/2017	226	$9.5
DY 2017/2018	243	$10.8
DY 2018/2019	172	$10.1
DY 2019/2020	184	$6.8
DY 2020/2021	199	$5.8
DY 2021/2022	180	$11.4
DY 2022/2023	49	$2.0
DY 2023/2024	90	$2.3
Total	**1,972**	**$94.1**

Table 16 Dynamic Pricing Program BRA Results

	Cleared Capacity (MW)	PJM Capacity Payment (Million $)
DY 2014/2015	267	$12.2
DY 2015/2016	426	$23.3
DY 2016/2017	461	$20.0
DY 2017/2018	387	$17.0
DY 2018/2019	378	$10.0
DY 2019/2020	225	$2.2
DY 2020/2021	425	$13.1
DY 2021/2022	177	$4.8
DY 2022/2023	186	$2.5
DY 2023/2024	177	$4.3
Total	**3,109**	**$109.4**

Table 17 illustrates the amount of capacity cleared in the BRA by the EmPOWER Utilities for the delivery years of 2022/2023 and 2023/2024. The table also shows the amount of capacity revenue that the Utilities can expect to receive from PJM in the two delivery years, which will be used to offset the costs of the DR, EE&C, and dynamic pricing programs borne by ratepayers. The amount of capacity cleared in the 2023/2024 DY auctions is 32 MW more than the amount of capacity cleared in the 2022/2023 DY.

Table 17 Maryland Utilities' PJM BRA Results and Expected Revenue for Delivery Years 2022/2023 and 2023/2024

DY 2022/2023					DY 2023/2024				
Cleared Bids (MW)				Value	Cleared Bids (MW)				Value
DR	DP	EE&C	Total	($Million)	DR	DP	EE&C	Total	($Million)
N/A	186	49	235	$4.4	N/A	177	90	267	$6.6

EmPOWER Maryland Funding Levels

EE&C Program Funding

On December 18, 2020, in Order No. 89679, the Commission approved the 2021-2023 program cycle budgets based on the EmPOWER Maryland Utilities' proposals. Table 18 breaks down the 2023 Commission-approved budgets for each of the Utilities, while Table 19 illustrates the actual 2023 expenditures by the Utilities with respect to their EmPOWER Maryland EE&C programs.

Table 18 Forecasted 2023 EE&C Budgets

Utility	Residential	C&I	DHCD Limited-Income Program	Total
BGE	$63,207,684	$79,429,334	$13,110,731	**$155,747,749**
DPL	$8,256,704	$23,971,741	$0	**$32,228,445**
PE	$17,794,210	$33,474,775	$3,799,122	**$55,068,107**
Pepco	$25,571,201	$55,932,803	$0	**$81,504,004**
SMECO	$16,112,885	$9,758,060	$0	**$25,870,945**
Total	**$130,942,684**	**$202,566,713**	**$16,909,853**	**$350,419,250**

Table 19 Reported 2023 EE&C Spending

Utility	Residential	C&I	DHCD Limited-Income Program	Total
BGE	$60,236,679	$59,835,068	$11,753,830	**$131,825,577**
DPL	$7,998,098	$16,027,330	$1,544,142	**$25,569,569**
PE	$14,059,263	$33,891,826	$2,388,535	**$50,339,624**
Pepco	$24,025,956	$41,668,585	$5,322,559	**$71,017,100**
SMECO	$15,049,066	$6,400,514	$5,786	**$21,455,366**
Total	**$121,369,061**	**$157,823,323**	**$21,014,852**	**$300,207,236**

Table 20 details the EmPOWER Maryland EE&C program surcharges and revenue requirements for each of the Utilities. The EmPOWER Maryland surcharges are a volumetric-based charge, subject to the individual ratepayer's monthly energy usage. The revenue requirements do not correspond to the filed budgets because program costs are amortized and collected over a five-year period as directed by the Commission in Order No. 81637.[32] The Commission issued an order at the end of 2022 that will transition the recovery of EmPOWER costs to a single year by 2030. This process of shortening and then eliminating the amortization of EmPOWER costs over five years will start in 2024.[33]

[32] *In the Matter of the Commission's Investigation of Advanced Metering Technical Standards, Demand Side Management (DSM) Cost Effectiveness Tests, DSM Competitive Neutrality, and Recovery of Costs Advanced Meters and DSM Programs*, Case No. 9111.

[33] Order on Cost Recovery and Unamortized Balance Retirement, Order No. 90456, Case No. 9648 (Dec. 29, 2022). The process to shift to an expensing model was subsequently updated in Commission Order No. 90957, Case No. 9705, and its letter orders approving the utility surcharges on February 21, 2024.

Table 20 shows the surcharge by utility and Table 21 shows the unamortized balance as of December 2023.

Table 20 2023 EE&C Monthly Surcharges (per kWh) and Revenue Requirements

Utility	Residential	Small C&I	Large C&I	Revenue Requirement
BGE	$0.00440	$0.00995	$0.00388	$109,383,365
DPL	$0.00581	$0.00838	$0.00838	$28,443,221
PE	$0.00641	$0.00651	$0.00760	$41,934,020
Pepco	$0.00593	$0.00647	$0.00647	$80,476,340
SMECO	$0.00758	$0.00537	$0.00537	$23,783,368

Table 21 2023 Unamortized Balance

Utility	2023 Unamortized Balance
BGE Electric	$116,294,685
BGE Gas	$35,754,068
DPL	$24,095,939
PE	$67,816,469
Pepco	$64,410,181
SMECO	$30,687,711
WGL	$22,317,692

Demand Response Program Funding

The December 17, 2020 Commission order similarly approved three-year budgets for the demand response programs operated by BGE, DPL, Pepco, and SMECO. Table 22 details the EmPOWER Maryland demand response surcharges and revenue requirements for each of the Utilities operating an approved DR program.[34]

Table 22 2023 Demand Response Monthly Surcharges (per kWh) and Revenue Requirements

Utility	Residential	C&I	Revenue Requirement
BGE	$0.00275	N/A	$33,724,079
DPL	$0.00158	$0.00022	$3,791,281
Pepco	$0.00264	$0.00013	$15,467,405
SMECO	$0.00215	$0.00031	$5,166,293

Table 23 details the respective forecasted and reported budgets for each of the EmPOWER Utilities operating an approved DR program during 2023. All of the Utilities' programs were under budget for the 2023 program year.

[34] PE did not operate a separate DR program during 2021 and therefore did not file for a surcharge recovery of DR program costs.

Table 23 2023 Demand Response Forecasted and Reported Budgets

Utility	Forecasted Budget	Reported Costs	Variance
BGE	$50,999,179	$37,341,831	($13,657,348)
DPL	$4,200,750	$3,863,881	($336,869)
Pepco	$17,636,419	$17,242,170	($394,249)
SMECO	$6,701,194	$5,807,352	($893,842)
Total	**$79,537,541**	**$64,255,234**	**($15,282,308)**

Evaluation, Measurement & Verification

Determining and validating electricity savings and related impacts is a critical component of EE&C and DR programs. The process of EM&V of resulting program savings is particularly important in determining: the effectiveness of program delivery; the factors driving or impeding customer participation in programs; characteristics of participants and non-participant customers; determinants of equipment decisions; and customer satisfaction with program delivery. Moreover, the design and depth of program data collection, monitoring, and analyses can impact the accuracy and prudence of compliance results. Given the scale of the EmPOWER Maryland initiative and the potential bill impacts, the Commission is sensitive to the issue of program credibility and transparency. This process also evaluates free-ridership, spillover, cost-effectiveness, deemed savings calculations, etc., pertinent to a thorough and ongoing review of viable and cost-effective energy efficiency and demand response programs.

Based on EM&V best practices, the Commission adopted an independent, third-party evaluator model to review the EmPOWER portfolio results.[35] In this model, the Utilities direct primary evaluation and verification activities through an EM&V contractor; subsequently, the Commission's third-party, independent evaluator provides independent analysis and due diligence of the EM&V process. Because this thorough evaluation process requires up to six months following the receipt of program data from the prior calendar year to complete, this report illuminates the results of the Utilities' 2022 program year reported savings.

Overall EM&V Findings of the 2022 EmPOWER EE&C Program

Energy and Peak Demand Savings

In 2022, Guidehouse's evaluation of the first-year savings[36] was 1,088,501 MWh and 198 MW, which was 91 percent and 97 percent of the Utilities' reported energy and demand savings for that year. For the 2022 program year, Guidehouse estimated an effective net-to-gross (NTG) ratio of 0.63 for annual energy savings and 0.70 for peak demand savings. The NTG ratio is used to derive savings specifically attributable to the EmPOWER programs by calculating free-

[35] Order No. 82869 (Aug. 31, 2009).
[36] "First-year savings" is the amount of energy a measure will save in the first year in which the measure is installed.

ridership levels and reducing reported gross savings by that amount.[37] Following the application of the calculated NTG ratios, the net savings for program year 2022 were 647,445 MWh and 126.745 MW.

As the EmPOWER Maryland independent evaluator, Loper Energy supports the Commission's oversight of the statewide evaluation of the EmPOWER EE&C programs conducted by Guidehouse. Loper Energy's verification analysis confirmed Guidehouse's results and accepted all of the evaluated energy and demand savings estimates for program year 2022. This important result should increase ratepayer and other stakeholders' confidence that the evaluated savings from the EmPOWER Maryland programs are real and credible.

Given that the key energy assumption values and NTG ratios have been updated and other anomalies in the program tracking databases have been rectified to improve the quality of reporting, it is expected that the Utilities' reported savings estimates for 2023 should continue to be very similar to the evaluation results. Changes to evaluation parameters and codes and standards will have the effect of raising the baseline level of energy savings, therefore reducing the incremental energy savings achieved by installing efficient equipment. The EM&V contractors will monitor and reflect these changes in future evaluation cycles.

Cost Effectiveness

Table 24 presents the 2022 SCT cost-effectiveness results by sector for each of the Utilities.[38] The sector-level benefit-to-cost ratios reflect the present value of the benefits compared to the present value of the costs, aggregated from each program in the sector-level sub-portfolio. As noted, SCT ratios greater than 1.0 indicate that the financial benefits that accrue over the life of the measures exceed the financial costs of the program, specifically the costs associated with: utility program administration; the provision of incentives to free riders; and customer outlays for the efficiency measures. Statewide, both the residential and C&I sub-portfolios were cost effective in 2022, with overall SCT scores of 1.79 and 2.44, respectively.

Table 24 2022 Portfolio SCT Results

	Residential	Commercial	Portfolio
BGE	1.95	2.67	2.30
Pepco	1.69	2.03	1.89
PE	1.99	2.72	2.35
DPL	1.30	2.33	1.95
SMECO	1.36	2.71	1.73
Statewide	1.79	2.44	2.12

At the statewide level, the 2022 EmPOWER residential portfolio is expected to generate approximately $1.79 in utility and participant benefits for each dollar of utility and participant cost while the EmPOWER commercial portfolio is expected to generate approximately $2.44 in

[37] A "free rider" is a customer who would have installed an energy efficiency measure absent the utility-provided EmPOWER incentive.
[38] The 2023 program year cost-effectiveness results are expected in the second half of 2024.

utility and participant benefits for each dollar of utility and participant cost. For a total investment of $318 million,[39] the state's Utilities, participants, and ratepayers will realize approximately $675 million[40] in financial benefits via electricity, fuel, and water savings generated over the lifetime of the measures installed through the EmPOWER program. These results correspond to a net benefit of approximately $357 million.

When assessing whether to approve the Utilities' plans, the Commission evaluates cost effectiveness at the sub-portfolio level, i.e., the C&I and residential sub-portfolios should both generate SCT ratios greater than 1.0. Thus, individual programs do not necessarily need to be cost effective as long as other programs are sufficiently cost-effective to generate sector-level SCT ratios that are greater than 1.0. The Commission may approve individual programs that are not individually cost effective to ensure a broader array of energy-saving opportunities amongst rate classes, income levels, etc., or because the program may promote innovative technologies and market-transformative practices leading to broader energy savings. All EmPOWER Utilities have developed cost-effective portfolios that pass the SCT test, most by a comfortable margin.

2023 per Capita Electricity Consumption and Peak Demand

Table 25 and Table 26 compare the per capita energy use and peak demand from 2013 to 2023 for all Maryland utilities. In 2023, most of the state's electric utilities experienced a decrease in per capita energy use and per capita peak demand as compared to 2022 levels.

Table 25 2013 - 2023 per Capita Energy Consumption

	Per Capita Energy Use MWh										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BGE	12.06	11.86	11.82	11.57	11.31	11.44	11.25	11.17	11.10	11.10	11.02
Pepco	8.1	7.81	7.94	7.73	7.56	7.6	7.45	7.21	7.17	7.00	7.07
PE	17.53	17.64	17.39	17.57	17.6	18.1	17.47	17.04	16.52	16.59	15.98
Delmarva	12.6	12.55	13	12.73	12.65	12.89	12.52	12.1	9.79	10.31	10.28
SMECO	10.49	10.21	10.25	10.03	9.72	9.75	9.96	9.45	9.20	9.67	9.21
Choptank	12.92	12.55	13.04	12.73	13.24	13.42	12.52	12.1	N/A	N/A	N/A
Hagerstown	7.71	7.6	7.62	7.58	7.49	8.27	8.05	7.71	7.91	7.46	7.15
Easton	16.52	16.41	16.55	16.33	16.03	17.12	17.36	15.01	15.63	15.08	14.10
Thurmont	13.27	13.02	13.68	13.06	12.61	13.41	11.94	11.77	11.22	11.29	10.92
Berlin	9.37	9.9	10.61	10.15	9.86	11.06	10.13	10.05	10.21	9.71	9.12
Williamsport	9.87	10.06	10.04	9.64	9.39	9.85	9.65	9.34	9.86	9.96	9.87
Somerset	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A&N Coop.	10.81	11.06	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[39] The $318 million total investment is the present value of both utility and participant costs.
[40] The $675 million in financial benefits is the present value of both utility and participant benefits.

Table 26 2013 - 2023 per Capita Peak Demand

	Per Capita Energy Use kW										
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
BGE	2.38	2.27	2.36	2.4	2.34	2.36	2.22	2.3	2.29	2.23	2.22
Pepco	1.55	1.57	1.88	2.03	1.62	1.62	2.73	2.6	2.58	1.58	1.51
PE	3.1	2.62	3.68	3.49	3.42	3.34	3.19	3.39	3.28	3.02	2.96
Delmarva	2.72	2.62	2.76	2.83	2.67	2.64	2.67	2.61	2.11	2.08	2.06
SMECO	2.15	1.93	2.76	2.36	2.41	2.42	2.27	2	1.94	1.98	2.07
Choptank	3.33	2.59	3.33	2.83	2.99	2.98	3.31	3.08	N/A	N/A	N/A
Hagerstown	1.54	1.28	1.66	1.5	1.52	1.55	1.49	1.56	1.52	1.59	1.39
Easton	3.81	3.24	4.27	3.73	3.63	3.63	3.6	3.42	3.42	3.36	3.30
Thurmont	2.39	2.03	4.33	3.26	2.94	3.11	3.44	2.63	2.45	3.15	2.63
Berlin	2.09	2.19	2.3	1.17	2.21	2.27	2.1	2.31	2.25	2.13	2.12
Williamsport	1.87	1.39	2.48	2.15	2.18	2.21	2.52	2.09	1.96	2.42	2.11
Somerset	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
A&N Coop.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 27 illustrates the per capita electricity usage and peak demand statewide. Generally, statewide per capita energy usage has been lower in 2023 than previous years.

Table 27 Statewide Per Capita Electricity Usage and Peak Demand 2007-2023

Year	Per Capita Energy Use MWh	Per Capita Energy Use kW
2007	12.38	2.56
2008	11.74	2.49
2009	11.73	2.53
2010	12.02	2.40
2011	11.70	2.50
2012	11.21	2.28
2013	11.13	2.18
2014	10.91	2.07
2015	10.96	2.37
2016	10.74	2.39
2017	10.53	2.21
2018	10.68	2.22
2019	10.49	2.50
2020	10.27	2.49
2021	10.02	2.42
2022	10.01	2.05
2023	9.92	2.02

2024 – 2026 Program Plans

On August 1, 2024, the utilities and DHCD filed their 2024–2026 EmPOWER program plans. The proposed plans contained three different scenarios that increased the amount of Greenhouse Gas Emissions ("GHG") emissions avoided while still meeting the energy reduction requirements of statute. The three scenarios were required by Commission Order 90546 after considering a GHG abatement study for EmPOWER early in 2023.

Various parties filed comments on the proposed plans and the Commission held a legislative style hearing on November 6, 7, and 8, 2023. The Commission issued Order No. 90957 which transitioned the EmPOWER program to the 2024–2026 cycle, and approved many of the utility proposals to be operated at the lowest cost scenario subject to certain modifications. The Commission permitted the utilities to conduct demand response programs to achieve the highest savings possible and thus higher cost for those programs. Some utilities requested to include beneficial electrification in their EmPOWER programs which was denied without prejudice. With the passage of HB864 (2024) the inclusion of beneficial electrification will likely be revisited this year.

The Commission also directed follow up on several program elements to further refine EmPOWER operations. Notable requirements were to (1) to develop a uniform program manual for midstream programs to better promote HVAC systems by January 1, 2025, (2) an examination of the costs and assumptions underlying some of the EmPOWER program proposals, (3) a review of the EmPOWER cost recovery framework to determine if there is a better method for transitioning EmPOWER to an expensing model, and (4) research and analyze a performance incentive mechanism structure for EmPOWER.

Upcoming Milestones

The Commission will review several Work Group reports as a result of Commission Order Nos. 90663 and 90919.

- Finance Work Group
    - A final report, filed by April 15, 2024 on options for the use of the remaining CEA Pilot Program budget that would best reach limited income customers and identifies additional data points and reporting metrics.
- ERPI Work Group
    - A status report, filed by June 1, 2024, on reporting templates to be used in the 2024-2026 program cycle, including those developed for GHG reduction reporting, as well as confirmation that all utilities will be reporting in a uniform and consistent manner or, in the alternative, details on any reporting matter that has not reached a consensus among the utilities.
- Cost Recovery Work Group (Surcharge and PIMs)
    - A final report, filed by July 1, 2024, on an improved method for balancing the shift to an expensing model with the rising program costs and increased surcharges. Should also include an examination of the rate design associated with C&I customers to determine how to mitigate rate impacts to this class of customers.

    - The Commission provided guidance on the development of a performance incentive mechanism (PIM) for EmPOWER. The Commission stated it was open to a preliminary PIM while paying down the unamortized balance and a permanent PIM once the balance was gone. The Commission required any PIM have both a reward and a penalty structure, and that rewards are only granted if goals are exceeded while producing net benefits. A status report of the work groups research and analysis is due October 15, 2024.
- Midstream Work Group
    - Required to develop a uniform program manual by January 1, 2025, such that utilities have similar operating parameters for contractors in their midstream programs across the State.

During the 2024 legislative session, the General Assembly passed House Bill 864 – titled "Energy Efficiency and Conservation Plans." The bill was signed by Governor Moore. The following are several key elements of the new law that will impact EmPOWER:

- Cost Recovery
    - The EmPOWER surcharge will shift to an expensing model on or before January 1, 2028.
    - The elimination of the unamortized balance that existed on December 31, 2024, or incurred before January 1, 2028, on or before December 21, 2032.
    - The EmPOWER Utilities can earn a return on the unamortized balance at the average cost of outstanding debt.
- GHG Reduction Target
    - The Commission will establish GHG reductions for 2025 and 2026 and for each three-year program cycle starting in 2027.
    - The Commission shall measure the GHG emissions from electricity and gas and the intensities of those emissions, using current data from the Department of the Environment.
    - As soon as possible in 2024, and at least eight months before the filing deadline for plans after 2024, the Commission shall issue an order that determines the GHG emissions reduction targets.

- Permit beneficial electrification within utility programs.
- Consider Choptank Electric Cooperative as part of the larger EmPOWER program.
    - The Commission is to determine by October 1, 2025, if Choptank should be a part of the larger EmPOWER program or simply have to offer energy efficiency programs.
- Develop regulations requiring the promotion of federal and state funds for certain applications within EmPOWER programs.
- Moderate income household work group
    - Established a working group to study and make recommendations as to program specific to moderate income customers for EmPOWER Maryland. The Commission is required to file a report with the General Assembly on this work group by July 1, 2025.